POPULAR Computing WEEKLY

Only 50p.

4–10 December 1986

Vol 5 No 49

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FEATURES

Your last chance to enter the 1986 Readers' Poll

Atari Christmas Show – full report

Role playing on the ST with Phantasie – p31

GAUNTLET

From the arcades to your micro – the long-awaited Gauntlet, from US Gold, is now available

Read our full review on page 30

With monitor, data c
£100 of software yo u
(Until mummy catc h

With the Amstrad 464 home computer the fun starts as soon as you get it home.

Because unlike many other home computers the 464 comes complete with its own green screen or full colour monitor.

It also comes with a convenient built-in datacorder.

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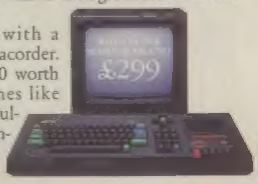
Whilst adults will love the way that it helps around the house with budgeting and accounts.



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To help you make the most of your 464, you can join the Amstrad User Club.

And there are lots of books and magazines devoted to it as well.

What's more you can buy joysticks, printers, disc drives, speech synthesisers and light pens to make it even more fun.

But perhaps the most pleasurable thing about the 464 is the price.

The complete home computer costs just £199 with green screen or £299 with colour monitor.

Not much to pay for a chance to get away from mummy.

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Address _____

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464/PCWY1

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TAPE

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Spectrum £8.99

DISK

CBM 64/128, Amstrad, Atari £14.99

Amiga/Atari ST, IBM £24.99

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ATARI GAMES

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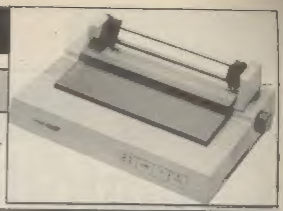

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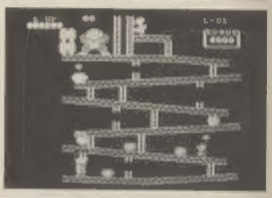

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ABC

How to submit articles Articles which are submitted for publication should not be more than 2000 words long. The articles, and any accompanying programs, should be original. It is breaking the law of copyright to copy programs out of other magazines and submit them here – so please do not be tempted. We cannot guarantee to return your programs – so please do not send your only copy. **Accuracy** *Popular Computing Weekly* cannot accept any responsibility for any errors in programs we publish, although we will always try our best to make sure programs work.

'Poor management' at Commodore claimed

BRICKBATS were flying last week between Commodore UK and its ex-advertising agency Madell Wilmot Pringle, which accused the computer company of poor management.

The row started after MWP resigned the Commodore account just two months after competing with four other agencies to take Commodore on. In an article in the advertising industry magazine, *Campaign*, MWP's planning director John Madell said that dealings with Commodore had been marred by late payment and "a singular lack of strategic direction and a idiosyncratic style of management that created a climate of uncertainty".

Commodore's general manager Chris Kaday was at first reluctant to reply to the accusations, saying that he didn't think it was "fruitful to discuss it at all".

Kaday: Sour grapes

Later last week however, Kaday made a statement, "I regret to say that the comments made by John Madell appear to reflect nothing but sour grapes. I understand it has been reported that only a small proportion of their creative work has been used and that the company's promotional emphasis has shifted in favour of below-the-line work.

"Without wishing to comment openly concerning their input to our projected Amiga business advertising campaign, I would say that we were forced to move this part of our promotion elsewhere."

Commodore's public relations company, Harvard Marketing, also said in respect of the allegations of bad management: "Our total dealings with Commodore management reflects the position of a company with a range of outstanding business and consumer products backed by positive direction."

Meanwhile, on slightly less controversial topics, Kaday announced that since Commodore began its promotional offers on the Amiga, the machine has been selling "like a bat out of hell – we've probably sold more in the last month than in the previous six put together".

He also confirmed that Sidecar, the IBM emulator for the Amiga, would be released in the UK: "And I am highly optimistic that it will be here by the end of the year."

● Commodore has now cut the price of the Amiga to £1,170 for a 256K machine. This is roughly in line with the price offered to existing Commodore users in the "special offer".

Intel slammed over marketing masterplan

GRIEF has come the way of Intel, manufacturer of the chips that launched the IBM PC and untold numbers of compatibles. Marketing High Technology: an Insider's View, by William Davidow, one time vice president (marketing) at Intel, may not be altogether bad news, but the review in the Economist is.

In the 8088 processor IBM "picked not just the wrong family of microprocessors . . . but the wrong Intel one . . . Crushing the competition is the name of the game – especially if all you have to offer is an inferior device . . . Intel took its minuses in performance and turned them into marketing pluses. It's inspiration was to realise that, no matter how inadequate the device was, the physical component represented only a fraction of the actual product . . ." Oh dear . . .

Lee's comeback

FRANCIS Lee, the man who didn't quite bring us *Star Trek* during his tenure as Beyond's publisher, has resurfaced as managing director of Starlight Software, a new company operating out of Ariolasoft's London offices.

Lee has set up Starlight to produce "top quality software on both 8-and 16-bit machines," and has signed an exclusive European distribution licence with Ariola.

Although Lee only left Beyond in September Starlight's first two titles are currently in preparation.

Lee: Sean the Starlight

Storm breaks over Elite's budget label

THE budget label 299 Classics, administered by the team which runs Elite Systems, is being discontinued, amid allegations of contract breaking by third party licensors.

The label was set up by Foundry Business Systems, from the same premises as Elite, to release back catalogue product from a number of independent companies at £2.99.

Microsphere's *Skooldaze*, Durell's *Scuba Dive* and Micromega's *Full Throttle* all achieved chart success for a second time as part of the 299 Classics label.

Elite boss Steve Wilcox is reported to have claimed that managerial staff were not available to cope with the extra work involved in the 299 Classics range.

However, two of the companies which licensed games to 299 Classics have stated that they have taken legal action against the company. "We made three of our titles available to 299 Classics on the understanding that they would be released within six months," said Luke Andrews of Vortex. "One, *Tomado Low Level*, was released, but the other two were not. We have issued a summons and it is now in the hands of our solicitors.

Additionally, I was not aware that we had been dealing with Foundry Business Systems – I had thought the label was part of Elite."

CP Software's Chris Whittington, whose chess title, among others was taken on by 299 Classics, said, "We have taken out a writ against Foundry Business Systems for alleged non-payment of monies."

Steve Wilcox of Elite and Foundry Business Systems was not available for comment as *Popular* went to press.

Spectrum Plus 2 loading problems?

THE 'performance defect' found in the Spectrum Plus 2 by Boots' quality control department (see last week's issue) may not have been as widespread as was first thought. Boots and Amstrad remain tight-lipped on the subject, with Amstrad still denying all knowledge of the problem, but several W H Smith stores hadn't experienced particularly high return rates on the machine.

Boots' first models had trouble with poorly-aligned reading heads, but although this has been fixed the machine still lacks volume control and an external tape port, so a prog problem can't be cured by adjustment.

Various other problems have been reported. The machine's non-standard joystick ports make it incompatible with many of the games currently on the market, which use Kempston protocols. Boots is dealing with this by bundling a Kempston interface with the machine.

Other problems reported include a drifting TV signal and incompatibility with peripherals, but it's not yet clear whether or not these are widespread.

Uridium 'clone' puzzle

HEWSON Software is considering action over the marked resemblance between Audiogenic's *Psycastria* and Hewson's *Uridium*. Andrew Hewson says he's aware that the two look similar, but won't comment on the matter.

It's not, however, clear if Hewson has any case, as the two products are differently coded. Any action would, therefore, have to be based on story line and/or screen design, and as yet there's no legal precedent for this in the software industry.

"Andrew Hewson did contact us," says Audiogenic managing director Martin Maynard, "and suggested that he was going to come up and visit us. We wrote to him and asked him to define what there was within the program that he thought was copyright infringement and he's been unable to come up with anything."

Maynard feels that Psycastria is simply the latest in a long time of shoot 'em up games with scrolling backgrounds, and that Uridium is as much based on preceding titles as it is.

Acorn pulls off masterstroke

Compact: Beat off rivals

ACORN has won an order worth nearly £1 million to supply Master Compact and Master 128 machines to Poland.

The 1500 Master Compacts and 200 Master 128s, plus disc drives and monitors are going to PZG, a miners' cooperative organisation in the industrial area of Kowlice. Acorn is also selling software for the machines to PZG – these will include games, education and utility programs for the machines.

According to Acorn, Amstrad and Commodore also competed for the contract.

Software Hotlines

Since the advent of home computers and games machines, the coin-op makers have had a lot of trouble on their hands keeping ahead of the competition. One way to keep the punters flooding in was to use expensive 'sit-in' cabinets (such as *Star Wars* or *Discs of Iron*) to heighten the tension . . . and these have gradually evolved into games such as *Hang-On* (which has you actually leaning a bike over to control your on-screen image) and *Space Harrier* (hydraulically operated seat that responds to the movement of your joystick). You can now add **Konami**'s *WEC Le Mans 24* to that list, sensation seekers, a sit-down coin-op that is said to leave all the others standing – literally. A single-screen motor racing simulator, this will fling you from side to side, bump you up and down as you scrape the kerb, the works.

It's already set the arcade trade alight, so expect it to make an appearance in your arcades soon. But who's going to be silly enough to try and do a Spectrum version, I wonder?

Certainly not **The Edge** I bet – far too sensible a bunch of human beings. They are just about to release *Palitron*, a game written for them by Charles Goodwin, heavily involved with such Virgin hits as *Strangeloop*.

Palitron

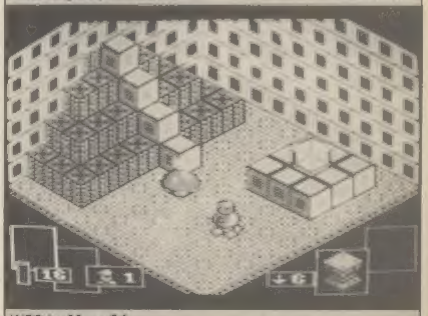
Palitron may look rather like any other 3-D perspective save-the-world job, but has a novel aspect in that much of the game revolves around your Servo Class C27 robot programming various Infra-Class Mark 3 robots scattered around the place, using a 'mini logo'.

Sounds like it has enough originality to warrant a look. Out soon on Amstrad, £8.95 (tape) £14.95 (disc).

At last – an *Arcanoid* clone for home micros. This brilliant *Breakout* variant hit the arcades about six months back. Like *Breakout*, you have a paddle and must rebound a ball against a wall, knocking out bricks as you do so (the original was designed by Apple founder Steve Wozniak, you know). *Arcanoid* carries this format on, but the walls have many different shapes, 'pills' can be collected that give you extra powers and monsters appear from time to time and generally get in the way.

Now **CRL** is producing a game which looks like it contains many of the same elements. Called *Ball Breaker*, it should be out in the New Year on Amstrad, Commodore 64 and Spectrum, priced £7.95 (tape) and £14.95 (disc). Knockout.

John Cook



WEC Le Mans 24

Clough plans cup run

Elite makes a comeback on BBCs

AFTER two years of relative neglect Acornsoft redirected its attention to *Elite*, this time under the auspices of Superior Software.

Superior teamed up with Acornsoft prior to the launch of the Master Compact to develop software for the machine, but *Elite* is now to be offered on the Master, Electron, 6502 second processor, Master Turbo and the BBC B. The Electron program is an improvement on the version Acornsoft released for Christmas 1984.

Elite has been one of

New-look Electron *Elite*

Acorn's more spectacular missed opportunities. The company launched the program in autumn 1984, but showed no sign of wanting to release it on any machines other than the BBC B and the Electron.

Firebird filled the gap, buying up the rights for 64, Spectrum and Amstrad among others (an Apple II version is sold in the US) and although this cost a substantial sum *Elite* remains Firebird's most successful title.

CDS is over the moon with Brian Clough's Football Fortunes

CDS's latest release represents a departure for the company – a computer-assisted board game entitled *Brian Clough's Football Fortunes*.

The game is something of a cross between *Monopoly* and *Football Manager*.

Your playing pieces move around the (non-computerised) board, where you can buy and sell players, accept sponsorships, fork out the wages, and so on, while the computer works out the match results and league tables.

Computer-assisted board games haven't traditionally been successful, but *Fortunes* is well designed, and could well break the mould.

Although Clough, the manager of Nottingham Forest for the past twelve years, has lent his name to the program he took no part in its design, which was done entirely within CDS.

Brian Clough's Football Fortunes goes on sale in the middle of January, and will be available for the Commodore 64, Atari 8-bits, Amstrad CPC and PCW and BBC/Electron at £14.95 cassette and £17.95 disc, and £24.95 on PC compatibles Apple II and Atari ST.

Free Microfair tickets

THE next ZX Microfair will be something of a double celebration – not only is it the Christmas show, but also the 21st Microfair.

It will take place at the Horticultural Hall, in London SW1, near Victoria Station.

Normal entry price is £2, but *Popular Computing Weekly* has 200 tickets to give away to readers.

If you would like free Microfair tickets, simply send off to Microfair ticket offer, *Popular Computing Weekly*, 12–13 Little Newport Street, London WC2H 7PP, enclosing your name and address on a blank envelope. You do not need to put a stamp on the envelope addressed to yourself.

No more than two tickets per person please, and they will be sent out on a first come, first served basis.

Time is short, so please make sure your application reaches us by Tuesday, December 9, to ensure we can get them to you in time.

You too could be there . . .

Footnotes

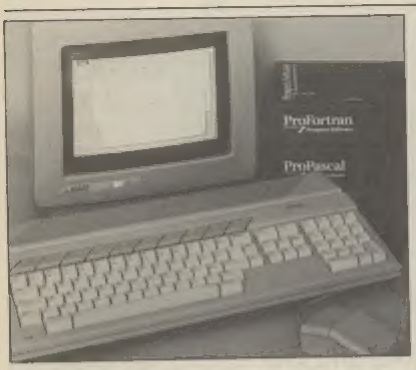
YOU can always tell when a company has fallen into the clutches of a certain kind of PR company. Various geezers you've never heard of start lashing out, calling for inquiries, drivelling on about what they had for breakfast and so on.

Step forward Stewart Bell, newly installed managing director of Microprose's UK arm. In one short week he's said how happy he is to have set up the company HQ next door to (or was it 20 miles away from) Charles and Di, and he's lashed out at the "shoddy product" the software industry is issuing today.

"The problem is that there are too many software houses around who are apparently working on the assumption that end users have IQs less than orang-outangs." What does he mean? Do you know anybody who has an orang-outang? Who are these software houses who think micro owners have orang-outangs? Whatever, Bell doesn't seem to reckon there's an orang-outang market out there.

Sinclair User clearly has an idea what the public wants, although if it's model tanks one wonders why they're reading computer magazines. The mag's recent "Win a Tank" competition asks you to name the two American tanks named after generals. Tricky question this, but we reckon the answer is Patton and Grant, and the other two are named after Sir Alfred Sherman, the well-known monetarist maniac, and Francis Lee, the well-known amicable departure.

Tatung UK meanwhile has an eye for the odd creative mispelling. *Jet Set Willie II* (sic) is due out soon for the Einstein alongside *Harvey Smith Showjumper*. The latter is no doubt related to the reference to the "Gallop" charts in the same announcement.



Atari comes out shooting

PERHAPS it isn't surprising that computer shows take on the character of computer owners.

The range is enormous – from the cheap and cheerful ZX Microfairs, through the very middle of the road Amstrad shows, to the stolid and worthy respectability of Acorn events.

Atari shows, however, are for headbangers, and last week's event in London was no exception. Immediately inside the door you were bombarded by images of diving aliens, screeching lasers, roaring Formula 1 engines, and swooping Ninja warriors, all to appropriate screaming sound effects.

To cap it all, the show organisers saw fit to broadcast dire renditions of Christmas carols while a robot clad in red suit and white whiskers went AWOL from Santa's Grotto and barged up and down the aisles, mowing down innocent bystanders.

The impression may be unfortunate, given Atari's efforts to leave this image behind. Perhaps it's only because the company decided to emphasise "entertainment" at this pre-Christmas show.

Or it may signify a shift in policy, due to the recent arrival of some of the men who took a business computing company like Commodore and turned it into the world's leading manufacturer of entertainment computers.

On the Atari stand itself there were STs running a communications demo (*ie*, playing MUD), there were old 2600 games consoles running old 2600 games like *Centipede*, *Star Raiders* and *Pole Position*.

There were brand new 7800 games consoles running old 2600 games. The only obviously new software was *Xevious* – but dammed good it was. Software that takes advantage of the 7800's facilities may take a while to arrive but it should be worth waiting for.

On the Llamasoft stand the Hairy Yak himself demonstrated his role as headbanger par excellence, showing off *Colourspace* to excellent effect while the tunes of Jean Michel Jarre threatened to bring the stand down around his ears.

But it wasn't all like this. Hidden away among the hordes of joystick thrashers and keyboard bashers were a few gems.

On the Atari stand itself could be seen the outstanding ST version of SubLogic's *Flight Simulator II*. In addition to the incredible graphics, and a number of advanced features (like autopilot modes), the ST implementation allows you to hook two STs together and enjoy a two-player dogfight.

Microdeal demoed something called *Journey into the Lair*. You take the ST software, the laser disc version of *Dragon's Lair*, hook everything up to a laser disc player, and away you go.

In any location you select an action (OPEN DOOR, FIGHT DRAGON), and the ST displays the appropriate sequence of animation from the laser disc. The end result is an adventure game with the animated graphics of the arcade game.

For the £99 price tag, you get the ST software and a copy of the *Dragon's Lair* laser disc. Of course, you need to shell out £500-plus on the disc player as well.

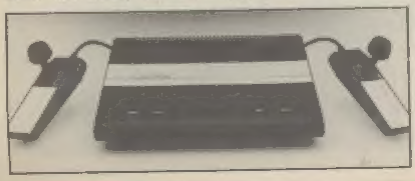
Also on the Microdeal stand was *Karate Kid II* – the officially licensed version of the movie. It's just another kick-'em-senseless game, but the graphics and animation are worth seeing.

Perhaps the single most impressive item at the show was Silica Shop's ST software list which puts paid, once and for all, to the idea that the STs are short of software.

On the down side of the show a couple of items caught the eye. First, ST owners should watch software pricing. Some companies appear to be selling US imports at prices anything up to £15 over the odds. One company was asking more than £40 for an Infocom game that Silica Shop is selling for £29.

Second, the much-talked-about, long-awaited Mac-Emulator was on sale at the Robtek stand. However, the company was unable to show it working and could not supply one for review. Until you've read a full review, you may want to hold on to your money.

Peter Worlock



DIARY DATES

DECEMBER

13 December
21st ZX Microfair
Royal Horticultural hall, London SW1
Details: Premier show for the Sinclair community. Add-ons, software, bric a brac stalls
Price: £2
Organiser: Mike Johnston, 01-801 9172

JANUARY

9–11 January
6th Official Amstrad Computer Show
Novotel, Hammersmith, London W6
Details: The year kicks off with the first of an ever increasing wave of Amstrad shows. Hardware, software, the works for CPCs and PCWs, with early support for the PC to be expected
Price: £3 adult, [illegible] children, £1 discount for advance booking
Organiser: Database Exhibitions, 061-456 8835

FEBRUARY

17–20 February
Which Computer? Show
NEC, Birmingham
Details: Mainly business exhibitors; includes Commodore, and low-cost PC clones
Price: £[illegible]
Organiser: Cahners Exhibitions, 01-891 5051

26–28 February
The Atari Computer Show
Novotel, London W6
Details: First chance for Atari to show off the exciting new strategy it's allegedly working on.
Price: £3 adult, £2 children, £1 discount for advance booking
Organiser: Database Exhibitions, 061-456 8835

Prices, dates and venues of shows can vary, and you are therefore strongly advised to check with the show organiser before attending. *Popular Computing Weekly* cannot accept responsibility for any alterations to show arrangements made by the organiser.

Budget suite from Psion . . .

PSION is joining the low-cost PC software producers with *PC-Four*, a suite of business programs based on its *Xchange* package, but priced at £69.

The four progams included are *PC-Quill* (word processor), *PC-Archive* (database), *PC-Abacus* (finance planner) and *PC-Easel* (business graphics).

While these are the same titles as the programs included in *Xchange* (and developments from Psion's suite of programs supplied free with the QL), Psion has removed facilities such as networking and multiple task-handling to keep the price down.

Details from Psion at Psion House, Harcourt Street, London W1H 1DT.

Ceefax-based programming

BBC owners will be available to create their own programs using information from Ceefax, with a new series of programs from BBC Telesoftware.

Starting in February next year, these programs are free to anyone with a BBC and teletext adaptor.

The aim is to provide the techniques of using Ceefax information as data within Basic programs.

Details from Jeremy Bradshaw, Telesoftware Organiser, BBC Enterprises, Room A3080, Woodlands, Wood Lane, London W12 0TT. Tel: 01-576 0563.

Compile with C

CA Special Products has now released a C compiler to run on its Casper 68000 second processor for the BBC machines.

Control C is supplied on either 40 or 80 track discs, and takes up about 32K of Ram. It costs £99 plus VAT.

Details from CA Special Products at Moss Way, Donibristle Industrial Estate, Dunfermline KY11 5JW.

. . . and more from Compsoft

COMPSOFT'S 'budget' range for the Amstrad PC1512 is now available through First Software. The range comprises versions of Compsoft's full price professional packages, with most of the features intact.

These include *Budget Delta 4* database at £99.95, and *Deltagraph*, a companion graphics program at £69.95.

Details from First Software [illegible] Intec 1, Wade Road, Basingstoke, Hants RG24 0NE.

ST business graphics pack

KUMA has enhanced its K-Graph business graphics package for the Atari ST with the release of K-Graph 2, a new version of the company's successful business graphics program.

The new package allows users to produce charts and graphs making use of Gem's windows and pull-down menus. It allows up to four graphs, each showing different data to be displayed simultaneously. The package's main new features are maths and trig functions; a save graph function; print/rename datasets; statistics; area graphs and variable x and y origins.

Both this and the original version featured sideways printing options, selective screen dumps, enlargement and reduction and automatic scaling of graphs and charts.

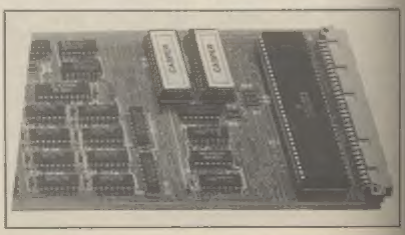
The new package costs £49.95, and owners of the old version can upgrade for £10.

Details from Kuma, 12 Horseshoe Park, Pangbourne, Berks RG8 7JW. Tel: 07357 4335.

Domark launches trial by trivia

AFTER an apparent PCW software dearth Domark has filled the breach with a [illegible]nversion of its new hit, *Trivial Pursuits*.

The game is a faithful reproduction of the original featuring high resolution displays and adding music questions to the original, although the PCW's basic sound facilities make this trickier than you might expect. It costs £19.95.



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Letters

The Interface question

Do Interface One with microdrives and the Plus 2 Spectrum really go together? Overcome by the vision of a home micro with Sinclair logo over a handsome keyboard, I bought a Plus 2 and this was my first concern. The reviews abseil over it and the question perplexing the elephant in love with the mouse – how? – is not attempted

The manual is curt (three lines on page 201), saying, "The Interface One and microdrives are connected to the expansion I/O socket at the rear of the Plus 2." Untrue of course. You have to connect them and how you do it is your problem. No reference is made to the radically altered physique of the Plus 2 as against its forerunners.

The wedge-shaped Interface One was pulled back on to and under the old Spectrum while two protruding captive screws reached up and through to the pcb mountings, holding the interface firm against edge connector wobble.

If you choose to connect the Plus 2 in the same way, you will need to remove these screws to allow a snug fit as there is no provision for receiving these or any screws through the base of the Plus 2. This is easiest done by separating top and bottom housings of the interface. The front left rubber foot of the Plus 2 must be removed for the same reason. This is a push-in grommet and can be pulled out intact. The I/O port connection is made simply enough by pushing the I/F on to the edge connector with no clearance problems, for instance.

You now, however, have the large Plus 2 poised cornerwise over the smaller interface secured only by the edge connection itself. This is an invitation to the wobbles fit to be set to music by Weber. In the event, sticking strips of Blu-Tack around the edges of the interface abutting against the Plus 2 and building up a surgical boot at the Datacorder end of the computer give a perfectly stable assembly. Unfortunately, microdrive one now obstructs the Joystick ports at the left edge of the micro.

The obvious alternative is a 56-way extension cable from the rear port to Interface One. This means another edge connection and the threat of spaghetti spread. However, I have settled for this in the meantime with a DKtronics cable for £10 from High Voltage.

And the verdict? The Plus 2 does indeed work fully with the microdrives in both 48 and 128K modes, and their speed is a true relief in comparison with the built in tape recorder.

But . . . there is an inordinate delay needed for warming up. At switch on from cold there is no response to microdrive commands. The drive whirls around in dumb idiocy. Leave the computer switched on and try again in not less than half an hour and response has become normal. In contrast, direct entry and tape operations work instantly on start up.

I have not been able to confirm if the fault is general or unique to my Plus 2.

Interface and drives still work perfectly with my old Spectrum. The condition, if incurable, is a great pity because this is otherwise a very good machine, perhaps the best value in new machines for this kind of money and a natural to work with microdrives. I would be grateful for any suggestions readers may have to bring my microdrives in from the cold.

George Watson
Croydon

Reset routines

After reading Peek and Poke in *Popular* a couple of weeks back I noticed you gave someone instructions on how to fit a reset button on a Commodore 64. I have used one of these buttons for a very long time, and have found the following routine very useful for getting a Basic program back after a *New* or a reset.

Clear the screen, enter the code below exactly, making sure it starts from the top left hand corner, and then type *SYS1024 {Return}*.

```
DATA 32,202,75,3,[illegible],L,42
```

You should now find you have your Basic program back, all intact and working.

To keep the routine in memory, repeat the first two steps above, then:

```
FOR I=53200 TO 53223 POKE I
(I-52176):NEXT [Return]
```

Then *SYS53200* will run the routine.

Simon Hall
Dorking

Readers respond

With reference to the letter from H P M Keegan, published in *Popular*, November 20, regarding printing with a QL and Serial 8056 printer, enter the following commands directly:

```
baud 1200
open #3, ser 1
list #3
```

This will enable a program to be printed on to the printer. After modifying the program, or listing again, just enter the *List* command. To list specific lines of a program, enter *List #3, 20, 100, 120* (whichever lines you need).

To print variables from within a program you would need the baud statement, and an *Open #* (any number between three and 15; nought to three being set initially by the QL, but they can

Puzzle

Puzzle No. 236

When Professor Otto Hex purchased a ticket for the Scouts' raffle he was quite optimistic that he had the winning ticket.

"The serial number on the ticket is 92727," he observed, "and this number is equal to the sum of the fifth powers of each of its digits." He jotted down the calculation and checked that this was indeed the case.

$$9^5 + 2^5 + 7^5 + 2^5 + 7^5 = 92727$$

The professor's keen mathematical mind had rooted out this peculiarity, and he was convinced that this was a good omen. Assuming this was the case, can you find any other five-digit numbers that also follow this rule?

Solution to Puzzle No. 231

Answer: After Christmas Day 1986, all four men will not meet until 15th March 1990.

In the program, the number of days in each month is held in the array M(12). Line 40 gives the starting values of the variables. DTE is the date, MTH is the month, DAY is the day of the week (Sunday = 1 to Saturday = 7), and C is the eight-day cycle which governs Dr Dimkin's visits.

The conditions governing each member's attendance are checked in lines 50 to 80. When all conditions are favourable the date is printed out.

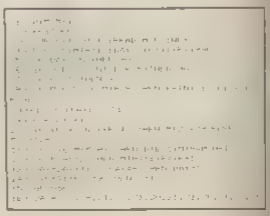
Finally, lines 100 to 140 increment each of the cycles independently.

Winner of Puzzle No. 230

The winner this week is Peter Thornthwaite of Bexleyheath, Kent who will be receiving £10.

Rules

The closing date for Puzzle 236 is December 22nd. Answers on a postcard please.



be used).

To print, *Print #3, A$, B$*, for example would print whatever value was held by *A$* and *B$*.

With regard to the other problem of not being able to print with three of the Psion programs, I presume Mr/Ms Keegan ran the program *Install_Bas* to set up the printer for the QL, the same needs to be done for the *Abacus* and *Archive* cartridges, as follows:

```
COPY mdv1_printer_dat to
mdv2_printer_dat
```

with the *Quill* cartridge in the left drive and *Archive* or *Abacus* in the right drive. If it says that the file already exists, enter *Delte mdv2_printer_dat* (without removing any cartridges) and do the *Copy* again.

Racol unfortunately requires graphics being printer which can't be done. The QL manual suggests photographing the screen!

R S Shrimpton
Aylesbury

Thanks to Kenneth Ross, M H Mottram, George Watson, John Turner and Neal Card, who also wrote in to rescue H P M Keegan – all your letters have been forwarded to him/her.

"... And there's no problem over crowd violence!"

BBC not forgotten

In your Games reviews, November 13, you clearly stated that, "BBC owners – at least as far as games playing goes – are almost a forgotten breed these days." This is not true.

There are loads of great games around for the BBC now: *Trivial Pursuit, Thrust, Green Beret, Ghosts and Goblins, Kane, Spy Hunter, Airwolf, Mikie, Bombjack* and many others tooumerous to mention.

Any game that is good always gets converted to BBC.

James Oliver
Sunderland

Parroting about piracy

Further to Robert Baker's letter in *Popular*, October 30, may I just add that if Amstrad feels so strongly about tape piracy, then what on earth is it doing selling audio equipment with twin cassette decks, obviously meant for copying tapes?

M Pike
North Yorks

Small consolation

In your October 23 issue you carried an article on the Sega Master system, claiming that it could spell the end for the humble 8-bit home computer. How can you possibly make this conclusion? The system offers no facilities not available on existing home micros, and is no cheaper.

Your main point of interest seemed to be the system's video chip, which you described as "An outstanding asset ... only the Commodore 64 comes anywhere near this standard."

Well, firstly the graphics in your screen shots didn't look all that impressive anyway, and secondly, on reading your description I was surprised to find that you were reeling off the exact specifications of the old MSX mark one video chip, with the exception of the 32 colour pallette.

Think I'm crazy? Well it might surprise you to know that Sega do make MSX computers, although they're not sold here, and of course with 256 sprites, 32 on screen at once in four different sizes, the MSX computers do indeed beat the Commodore.

Also you mentioned the choice of cartridges or beecards, which again normal MSX computers have, including cartridges with 128K Ram.

So in short, far from being a superior games machine, the Cega appears to be a fairly average machine with none of the advantages of a normal home computer. Unless the other game consoles being released can do considerably better, it's hard to see any "threat to the home micro industry as we know it".

Graham Steadman
Woking

The games consoles will be priced at around £80, which is considerably cheaper than any home computer currently being manufactured. At that price and with cartridge costs coming down, they could well appeal to the games players now using 8-bit micros.

Oric bytes back

It seems there has been a large quantity of people writing in to *Popular Computing Weekly* in recent issues, singing the praises of the Oric Atmos micro, and lamenting the lack of a good disc interface or support for their systems.

I would be grateful if you would bring to the attention of your readership the fact the Byte Drive 500 disc systems for the Oric (48K models only) are now back on the market at £159.50 (around half the original price), including disc interface, 3 inch disc drive and power supply, together with the very latest version of Byte Drive DOS which brings the standard of the Oric's Basic almost to a par with the BBC Micro in terms of flexibilty and facilities, including ten programmable function keys, random access disc files, *While/Wend* loops, text windows, command abbreviation facilities and much more, whilst taking up less space than the original Byte Drive DOS. Up to four disc drives of any type described as BBC-compatible (including 3 inch and 5¼ inch types) are supported.

If any users are interested (or there are any Byte Drive 500 users who have not yet been in contact), please would they write to BDUG at the address below – the users group has been running well over a year now and provides enthusiastic and owner-oriented support for the system.

Jeremy Hibbins
Byte Drive Users Group
Ashley House
Onslow Road
Sunningdale
Berks SL5 OHW

Fair warning

A warning to Commodore MPS801 printer owners. There is a new-style printer ribbon currently on sale. This is easily distinguished by the lack of an inker set into the bottom of the cassette.

The new ribbon cartridge is based on the typewriter and is crammed with pre-inked ribbon which is great when the typewriter print head descends with some force, but is useless in a dot matrix printer, the resulting print being a grey, almost unreadable text. I have tried out several of the new-style ribbons, all with the same result.

The original MPS801 cassette contains a short loop of ribbon which is freshly inked with each revolution.

J Holmes
Glasgow

Confused by QL cables

The QL supplement in September contained an advertisement by WD Software for an extension cable to connect ZX Microdrives to the QL.

The *QL User Guide* states that ZX Microdrives are unsuitable. Can you comment, please?

R Climie
Lanarkshire

According to WD Software, nine out of ten ZX Microdrives will work OK on the QL with its cable. WD says it will refund customers' money if they buy the cable and then discover that it doesn't work.

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An honourable Citizen

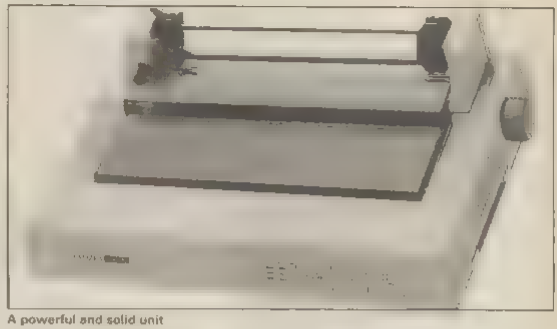
Peter Worlock finds the Citizen LSP 10 to be a reliable new printer

Not so long ago, the main problem facing anyone who wanted a printer was how to raise the money to buy one. Especially for home computer users, since most printers cost more than the computer itself.

Now, however, the problem is how to choose one make and model from the many available. Prices have fallen as quickly as print quality has arisen.

Although few printer manufacturers are household names, Citizen is probably among the lesser known names after the likes of Epson, Star and Brother. But the company has built a reputation for quality and value in the past year or so.

Among its current line of printers is the LSP 10, a medium-priced model with features that put it well up among the higher-priced competition.



A powerful and solid unit

Features

Construction is to a very high standard in stylish off-white, and the dimensions have been kept small – 15in wide, 10in deep, and a mere 3½in high.

The print-head is a nine-pin model, giving characters of 9 × 11 dots in normal mode, and 17 × 17 dots in NLQ (Near Letter Quality) mode.

Print speeds are reasonable – 120 cps in normal mode, 25 cps in NLQ. Noise levels are also acceptable, although in graphics mode, the printer starts to screech a little. Most dot-matrix printers suffer the same fault, however.

As far as the major bane of printer users is concerned – dip switch settings – Citizen has taken the middle line, putting the switches into a small niche under the print-head carrier bar. This is more convenient than the old Epson method which involved dismantling the entire printer to change a switch, but not as handy as having the switches on the outside of the printer casing.

Printing in bold gives a nice effect, underlining is easy, *and when combined with italics it produces this sort of correspondence.*

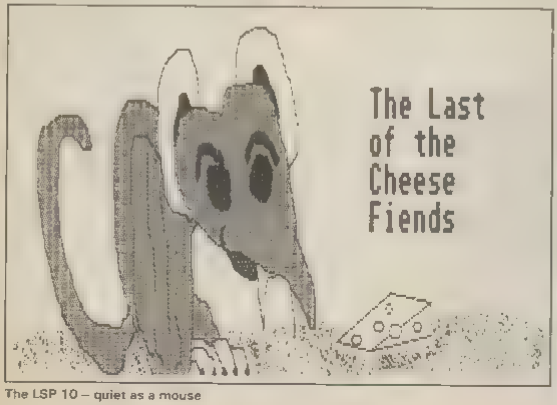
The LSP 10 can operate in two modes – selected by dip switch – emulating either an Epson or an IBM Pro Printer.

All other standard features are supported, including emphasised, double strike, italic, expanded and condensed print modes, multiple-density graphics, and downloadable character sets.

An optional tractor feed is included in the package, as are paper guides for single-sheet feed.

The printer comes fitted with a Centronics-style parallel interface. Optional facilities – at extra cost, naturally – include an RS232 interface at £54, and a multiple sheet feeder at £95.

Finally, the documentation is well-written and comprehensive, with lots of examples and a handy, tear-out reference guide to central codes.



The LSP 10 – quiet as a mouse

Conclusion

The LSP 10 is a well-made machine with features that pitch it firmly into the mid-range of current printers. However, at the price it represents good value for money in this very comprehensive area.

It's probably too expensive – and too powerful – for the job of churning out your program listings, but is ideal for heavy-duty word processing and graphics use.

The standard of construction holds out the promise of good reliability, and something to note in this respect – Citizen offers a two-year warranty on its printers, which should do a lot for your peace of mind.

Peter Worlock

Product *Citizen LPS 10* **Price** £275
Supplier Citizen Europe, 4/10 Crowley Road, Uxbridge, Middlesex UB8 2XW.

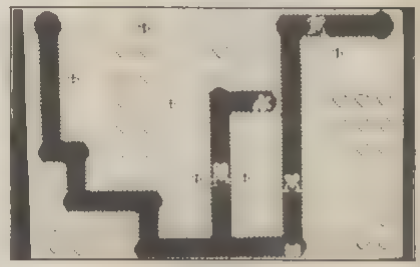
Of worms and bouncing babies

Marcus Rowland completes his three-part series on public domain software

Two weeks ago we looked at public domain software games. Here are the rest of them.

Willy the Worm probably needs about 128K, plus a graphics display. Registration is $10, no benefits are specified (PCBBUK Vol 241).

Bouncing Babies by Dave Baskin is an irresistibly sick idea that has often appeared as a stocking-filler electronic game. A building is on fire, and two attendants have to manoeuvre a trampoline to bounce an endless stream of babies into an ambulance. As the game progresses the number of babies in the air increases. The left and right cursor keys, or keys 1–3, are the only controls, shifting the trampoline to three points between the building and the ambulance. The colour graphics are excellent, and the game is extremely fast.



"Digger"

Bouncing Babies needs 128K and colour. Registration is $5, no benefits are specified (PCBBUK Vol 40)

Flightmare (by Peter Adams) is an interesting zap game. The scenario is vaguely similar to *Mad Max*, one of the last enclaves of civilisation, and aircraft factory, is under attack by hordes of marauding barbarians. The player controls a fighter plane, first in a strategic mode (using the cursor keys to fly to meet the most threatening enemy), then in a difficult tactical mode. This presents two views of the aircraft, one from above and one from the side, flying from West to East across the screen. The normal cursor keys move the aircraft up and down and backwards and forwards, the left-hand alphabet keys move the aircraft North or South (left or right from the 'pilot's' point of view). To attack, the plane must be directly behind the enemy; the ground undulates, making it hard to hit and easy to crash. Collisions with other aircraft or the ground wreck the plane.

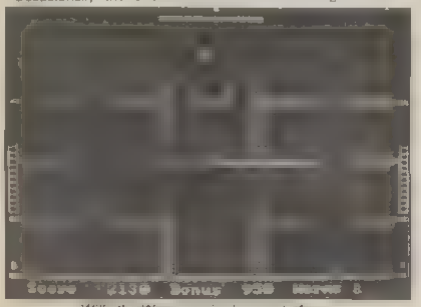
Occasionally the aircraft must dock with a blimp to take on fuel and ammunition. Attackers include bikers, aircraft and trucks, plus a heat seeking missile that can't be attacked, although it's possible to trick it into flying into the ground.

This program makes fairly effective use of colour graphics for an RGB or composite monitor. The concept and execution of this game are good, but there are a few flaws, notably in the author's spelling (in titles and screen messages), the poor graphics of the strategic screen, and in the fact that it doesn't seem to be possible to leave the tactical screen and rendezvous with the blimp if you run out of ammunition.

This is also the only game to crash (in every sense) if *Sidekick* was activated while it was running.

Flightmare needs 128K and colour (composite or RGB). The author asks for donations of $5–$50, no benefits are specified (PC-BBUK Vol 160)

Zaxxon (by Sega) is a genuine public domain version of the arcade game, by the original manufacturers. It seems to have all the features of other implementations, including 3D graphics, but doesn't save scores. It accepts joystick or keyboard control, and joystick use is strongly advised. Play proceeds in the usual waves of ascending difficulty, and is reasonably fast (though 8-bit versions I've seen have been faster). *Zaxxon* needs colour, but there are no indications of minimum memory or other limitations (PCBBUK Volume 135.)



Willy the Worm: squirming on platforms

Spacewar (by Bill Seiler) is a one or two player version of the program that originally introduced computers to spaceship games, and directly inspired *Asteroids*. Two ships orbit around an *Asteroids*-style screen, attacking each other with lasers and photon torpedoes. Their equipment includes force fields, invisibility screens, and a random-jump hyperdrive.

Options let you put a planet at the centre of the screen, turn gravity on or off, and have either ship controlled by the computer. The main charm of this game is its use of Newtonian physics; torpedoes go into orbit when fired, and if you don't take care to change your path they'll whip round the planet and hit you several seconds later.

The game is supplied in two forms; one using a normal IBM colour-graphics card, the other a high-resolution Hercules graphics card. Controls use the left-hand alphabet keys and the right-hand cursor pad; no keyboard problems are likely. This program 'locks out' *Sidekick*, but doesn't harm any files that are in memory.

Spacewar needs 128K and a colour board or Hercules-compatible mono graphics card. Registration costs $20 (around £15) and includes the latest version of the game; for $30 (around £22) the source code is also supplied (PC-SIG Volume 292).

All the programs described are available from International Software Distributors Limited, PO Box 872, Sutton Coldfield, West Midlands B75 6UP (021-378 2229), which imports directly from PC-Sig in California. Note that this is a different address from that given previously, this address is correct.

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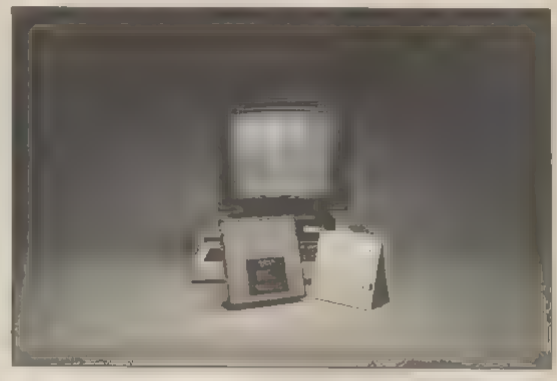
Duncan Evans plays with the toy not for executives, but for the average computer user at home



Previously available on disc or cassette, *Mini Office 2* is a Rom-based version that plugs into any BBC machine. In fact, if you're going to provide an integrated package, using the instant access that Roms provide is the most sensible and efficient method.

Physically, *Mini Office 2* consists of a circuit board containing four 27256 chips, and a short length of lead plus connector that plugs into a spare Rom socket (you still have one spare, don't you?).

The programs offered are a word processor, database, spreadsheet, business graphics, communications and lastly, and something of a throwaway item, a label printer.

If you've ever used *Wordwise* then you'll feel at home straight away with the *Mini Office* word processor. It's virtually identical in fact, the only changes being cosmetic. Most useful of these is the capability to process a 20, 40 or 80 columns. The disadvantage with the 80 column mode is that you get very little memory for your text, three pages of A4 to be precise. The 40 column mode is the most efficient as it uses the teletex mode 7, providing over 20K of free memory.

The facilities it offers are pretty standard for a text only word processor and include, justification, search and replace, block move and delete, preview option, merge text, automatic wordcount and the ability to have imbedded control commands that can be sent to the printer. All standard fare but essential never the less.

The database has an odd look to it, resembling a cut-down spreadsheet more than anything else. All the same it boasts 1023 records (enough for most small concerns), up to 20 fields per record, the essential sorting facility and a type 51 field identifier. The instructions for the database are not quite as clear as they could be and indeed the database itself is not simply laid out. In its defence it is comprehensive and offers calculation facilities as well.

The spreadsheet, like everything else in *Mini Office*, is fairly standard and does everything you'd expect a spreadsheet to do. It provides up to 52 columns by 99 rows with each column being up to 18 characters in size.

Also, the spreadsheet can lock and unlock rows, columns and cells to avoid values and formulas from being overwritten or changed, and allow various mathematical operations beyond +,–,* and /. The data from the spreadsheet can be saved and incorporated into the graphics program for displaying in a more attractive manner.

The graphics package is the only part of *Mini Office* which is something of a disappointment. It offers bar charts, line graphs and pie charts.

> *"Overall, Mini Office 2 provides a useful suite of functions . . . it's worth checking out"*

When displaying the pie chart, although the program allows up to 20 items of data, the ones with the smallest values are cobbled together and displayed under the anonymous banner of 'Others'. The pie chart itself is drawn slowly, as is the movement of the text labelling. When displaying the bar chart the names of items of data are abbreviated to one letter, regardless of however many there are of them and the text labels can only be run horizontally, not vertically which would be far more use.

For clubs and newsletters the facilities offered by Graphics are probably good enough but executive types should look elsewhere.

And so to Communications which mainly offers the facility to communicate with Microlink/Telecom Gold. Fair enough from Database's point of view but justification on the grounds that it's the most common protocol is plain hogwash. There is an option to customise the protocol used which could be useful for bulletin bases, but not for something like Prestel/Micronet 800.

Label printing can be regarded as something of a freebie tacked onto the end of the entire package. Having said that, if label printing is where you're at then this is certainly one for you.

Overall *Mini Office 2* provides a useful, if not spectacular, suite of functions. If you really only need one of the programs then it would be better to spend your money on a dedicated Rom, otherwise it's worth checking out the all-round capabilities of *Mini Office*.

Duncan Evans

Program *Mini Office 2* **Micro** BBC B, B+, Masters, Compact **Price** £59.95 **Supplier** Database Publications, Europa House, 68 Chester Road, Hazel Grove, Stockport SK7 5NY.

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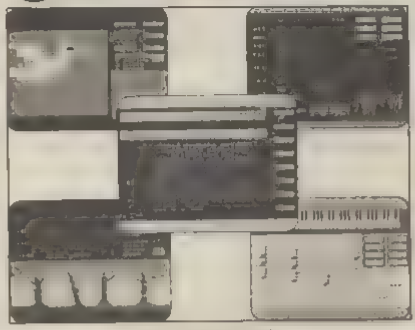
Designer games creation

Most computer owners go through a stage of wanting to write marvellous arcade games, finding that Basic is too slow and limiting, and bashing their heads against the wall trying and failing to learn machine code (I know I did). The popular solution is to buy one of the many games design programs on the market, the best of which for the Commodore 64 is Activision's *GameMaker*.

Written by Garry *Pitfall* Kitchen, this disc-based package has now been enhanced by the release of two *Designer's Library* discs – *Sports* and *Space*.



See all that you can be

The *GameMaker* program – which of course you will need to use the *Designer's Library* discs – is a sophisticated menu-driven package which allows you to define sprite shapes, backgrounds, sound effects, and various game parameters such as collision rules, scoring and so on. It's quite possible to build up respectable-looking games which run at machine-code speed, but the process is pretty time-consuming.

The Designer's Library discs make things even easier by giving you lots of files of sprites, backgrounds, sound effects and so on, which saves you having to define your own. Each disc contains a number of files which can be loaded into the appropriate section of the *GameMaker* program, manipulated and improved, then saved as fully functioning games.

The *Sports* disc, for instance, contains sections of background which can be cut and pasted together to create baseball diamonds, football (American) fields, basketball courts, billiard tables and so on. The sprite section contains relevant figures such as basketball players (from a variety of angles), golf balls, hockey balls, pool balls – quite a lot of balls in fact.

Also included are stirring theme tunes and plunky sound effects.

The *Space* disc is altogether more imaginative, with various spaceships (including a marvellous giant rotating Death Star), backgrounds showing alien plant life and strange machinery, zappy sound effects and so forth.

All the files can be edited using the facilities of *GameMaker*, which will be fairly familiar if you have seen any similar package; a grid-type sprite designer, a synthesiser-panel sound effects generator, lots of menus to define gameplay and comprehensive save/load facilities.

Most interesting though are the possibilities of combining files from the two existing libraries (more to come, no doubt) to create weird hybrids like footballing aliens or inter-galactic billiards.

Certainly better than struggling to count backwards in hexadecimal, and probably the closest most of us will ever get to writing decent arcade games.

Chris Jenkins

Program *GameMaker Designers Library* **Micro** Commodore 64 **Price** £14.99 disc only **Supplier** Activision, 23 Pond Street, London NW3.

Basic compiler

Whatever your level of programming expertise, there's a lot to be said for compilers. They often give you the ease of a high-level language combined with a speed close to that of machine code.

Of course, the fastest compiled languages have been designed for compilation – such as Pascal and C.

However, unless you're writing arcade games, or other applications in which speed is crucial, Basic can be adequate and a good compiler can reduce irritating pauses to a minimum.

The latest Spectrum compiler has just been released by HiSoft and it is impressive.

Many Basic compilers have a number of faults including the fact that they tag on to the end of your program a large chunk of code containing routines required to execute the program, and they often require you to choose between integer math (fast but limited) or floating point (slow).

HiSoft Basic adds only the routines your program needs to run, not a catch-all block of code. And it handles integer or floating point math as appropriate, giving you the best of both worlds.

The compiler itself takes up only about 11K of memory, so on a 48K Spectrum you can compile a 30K program, while on a Spectrum 128 or Plus-2 you can handle a program up to 40K in length.

Using the program is simple. All commands to the compiler are contained in REM statements in your Basic program. For example,

```
REM: OPEN #
```

tells the compiler to begin compilation from that line.

Typing *C begins actual compilation.

Compilation times are adequately fast, the size of your compiled code will not be substantially larger than the simple Basic, and speed improvements may range from about three times to hundreds of times as fast.

Most compilers are also restricted in that they cannot handle all Basic commands and syntax. *HiSoft Basic* is no exception, but its limitations are not major.

It will not support arrays of more than two dimensions, it won't support system commands such as SAVE, LOAD, etc, and the default attributes for graphics commands are not incorporated.

There is a difference, too, in the way it handles computed GOSUBs and GOTOs. The target line number must exist, unlike Basic in which the branch will hit the first line number following the target line.

Personally I don't consider this a limitation as computed branches are poor programming practice, but Spectrum programmers may have to change some old programs to accommodate the loss.

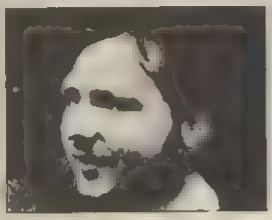
There are a few other differences from Basic, but these are not omissions. They merely require the addition of an extra compiler instruction. For example, REM: LEN allows you to specify the maximum length of a string.

The *HiSoft Basic* tape comes with two versions of the compiler. A version specifically for the 128 and Plus-2 has some extra features, notably a menu-driven command system.

If you're a committed Basic programmer, but could use some extra speed in your programs *HiSoft Basic* is an excellent buy.

Peter Worlock

Program *HiSoft Basic* **Micro** Spectrum 48K, 128K and Plus-2 **Price** £15.95 **Supplier** HiSoft, The Old School, Greenfield, Bedford MK45 5DE.



The Batman routine

Langley Hackers and Tony Kendle bring you another routine for Batman on the Spectrum

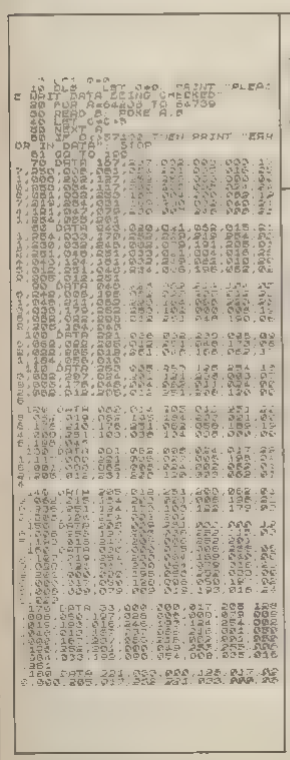
Welcome back to the Langley Hackers with another routine for the excellent *Batman*. It's the Spectrum version this time and there is absolutely nothing left to the imagination.

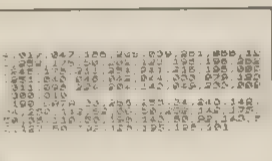
"The routine includes infinite lives, disable kill, infinite fast speed, jump and shield (but you lose these last three if you touch a small batman, which disables everything).

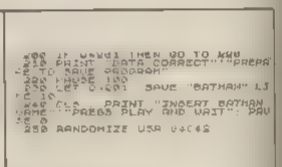
"You also have all the equipment at the start and the batcraft is already assembled. Be careful – if you fall from a great height and you can't jump back up, you will have to start again.

"When you load the tape it will automatically check the data and then save itself. Let this run its course then press any key and play your *Batman* tape with all its features."

More from this letter next week – and of course, *Strike Force Cobra*.







Charts

Top Twenty

1	(1)	World Games	Epyx/US Gold
2	(3)	Computer Hits Vol 3	Beau Jolly
3	(2)	Trivial Pursuit	Domark
4	(5)	180	Mastertronic
5	(–)	Breakthru	Data East/US Gold
6	(–)	Cobra	Ocean
7	(12)	They Sold a Million (3)	Hit Squad
8	(–)	Konami's Coin-op Hits	Imagine
9	(15)	Five Star Games	Beau Jolly
10	(4)	Infiltrator	Mindscape/US Gold
11	(7)	Thrust	Firebird
12	(–)	Crystal Castles	US Gold
13	(–)	The Great Escape	Ocean
14	(–)	Avenger	Gremlin Graphics
15	(8)	Uridium	Hewson
16	(–)	1942	Elite
17	(–)	Ace of Aces	US Gold
18	(6)	Ollie and Lisa	Firebird
19	(9)	Ninja Master	Firebird
20	(10)	Paperboy	Elite

All figures compiled by Gallup/Microscope

GOAL!
BBC/Electron

The first realistic football simulation for the Electron featuring excellent graphics, music and an intelligent opposition that actually adjusts its skill level during the game depending on current state ■ play.

Cass. £7.95

FUTURE SHOCK
BBC/Electron

An amazing new style of Arcade game with inter-active sub plots, using large detailed graphics for superb detail. This game pushes the machine and the player to unparalleled limits for many hours ■ enjoyment making this a game not to be missed

Quote from Electron User:– December issue
"Future Shock is an excellent program, a game which overflows with character and humour." "Overall Rating 9/10"

£7.95 Cass.

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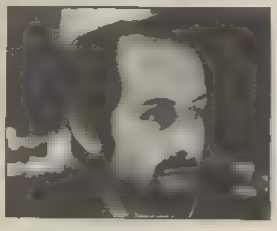


The weekly adventurer's Fix

New ways to write adventures and new places to read about them, from Tony Bridge

A couple of weeks ago, I spoke about a program called *2001 1/2* from Microtech and some of you may like to know their address. It's Microtech, The Bedroom, 88 Whitley Spring Crescent, Ossett, West Yorkshire WF5 0HS (0924 279234).

In the same Corner, I also mentioned *Flook*, by David Oya – it may not be immediately obvious that the adventure is initially available for the Amstrad machines.

Both of those adventures were written with *The Quill* and the rumour of a powerful extension to that utility ■ now fact with the release of the *Professional Adventure Writer* (or *PAW*) and *The Press*, which will allow for text compression. I haven't seen these add-ons yet, but will report as soon as possible.

However, I *have* seen the latest version of *The-Fix* from Kelsoft; it's another add-on for *The Quill*, and briefly, consists of several sub-programs which allow for more complex flag-handling and better synonym recognition.

Possibly *The-Fix*'s most interesting feature, however, is that ■ allows for a further two words to be recognised and acted upon ■ a single input. *The-Fix* has had some success already, but Kelsoft tells me that it has now produced *MiniFIX* at just £3, which is as its name suggests a cut-down version and contains just the section which handles the expanded parser. Both versions work with *The Patch* and *Illustrator*.

With both programs comes a demonstration database which displays the kind of effects which can be obtained. Although Gilsoft's *PAW* and *Press* will doubtless prove to be indispensible to serious adventure-writers, I'm sure that they will also set you back quite ■ hefty sum, so if you want to make your *Quill*'d adventures look ■ little different, have ■ look at *The-Fix* from Kelsoft at 28 Queen Street, Stamford, Lincolnshire PE9 1QS.

I'm glad to see that a program I looked at in the November 13 issue, Adventure Software's uniquely-named *Adventure*, will now be available to a wider public. It will be renamed as *A Serf's Tale, a Retelling of the Original Adventure* and will be released in time for Christmas for just £1.99 on the Players Software label.

In the meantime, Nigel Brooke and his hitherto anonymous colleague Said Hassan, have re-formed as Smart Egg Software and have been commissioned by Mastertronic to write *Rigel's Revenge* using the same system that was responsible for their previous effort. As you'll know, I was fairly impressed with their debut story, and look forward to the next one. Incidentally, it's good to see that some companies ■ least are putting toes back into the icy waters of text-only adventures, let's hope others follow suit.

While I'm in ■ 'follow-up' mood, G T Kellett of the aforementioned Kelsoft tells me that he is a member of *Adventure Contact* (the monthly publication for adventure-writers as much as players) and that the cost of each issue has just risen to £1. Still not bad, I think, though this is one of the few such magazines that are actually worth spending this sort of money on; there's a lot of inside information on the *GAC* and *Quill* here, from both the editor and from benevolent members willing to share their hard won knowledge with others.

If you're struggling with one of the adventure-writing utilities, you'll find the *Contact* invaluable and required reading. The address, as I've said before, is 13 Hollington Way, Wigan WN3 6LS.

I've just received the latest copy of its sister magazine, *Adventure Probe*, which is also £1 a copy. Co-editor Sandra Sharkey reminds me that a 12-month subscription will lower this figure to 75p. These two monthlies contain a lot of feedback from members ■ the form of articles and a lively Letters page, which is always a good sign.

I quite often mention enterprises such as this and make no excuse – I feel that it ■ concerted efforts such as these that keep us adventurers toiling at those difficult games.

And as for solutions; not only are there plenty in the magazine itself, but Sandra also has full solutions for a wide variety of adventures for the princely sum of 18p.

Oh dear, I seem to be both on the subject of Adventure magazines – while I am, I should also mention The Adventurers Club once more. Henry Mueller is gradually getting this one back on the road to solvency once more.

I've just received the new dossier, which continues much as it left off with the presence of Honorary President Peter Austin of Level ■ (this month listing his personal dislikes ■ adventures – see what he thinks of the competition!) and as much help and advice as always. Of interest to me was the seventh part of the full solution to *Mordon's Quest*. From this, I've found out that the name of the magazine I've acquired in the library dome will be required later to answer the sales robot's question. Apart from this, there is also the third part of the solution to *Lord of the Rings*, and the *complete* solution for *Adventureland*.

Incidentally, Henry tells me (and it has been confirmed elsewhere) that Nick Walkland's *Orcsbane*, probably my favourite 'fanzine', will soon, alas, be no more. ■ you are a subscriber to this particular bundle of (almost) regular nonsense and commonsense, then drop a line to Nick offering your services and let's see if we can persuade him to change his mind.

Erik the Viking. How do you get past the invisible wall? M Baxter, 193 Rowan Place, Newton Aycliffe, Co Durham DL5 8BA.

Ten Little Indians. What do you do with the hammer and chisel and how do you open the large wall safe? Geoff Lorimer, 1 Deepdale Drive, Morton Park, Carlisle, Cumbria CA2 6LS.

Mordon's Quest on Spectrum. Can't get through invisible barrier or past gladiator. How do I get air to dive to underwater basin? D Blunden, 49 Little Norton Lane, Sheffield, S Yorkshire S8 8EB.

Forestland on Commodore 64. I have found the safety match – but where is the box to strike it on? Les Austin, 25 Royal Avenue West, Onchan, Isle of Man.

The Price of Magik on Spectrum. How do you command the various monsters in the game? Jason Ross, 2a Balloch View, Seafar, Cumbernauld, Glasgow G67 1HE.

Supercom (Atlantis) on Spectrum. What is the code for Armageddon? Carl Brennand, 4 Lyndale Grove, Lostock Hall, Preston, Lancs PR5 5XX.

The Hobbit on Spectrum. Once you have the ring, where do you go? How do you get past the spiders? Is it important to get past the spiders? Once out of the goblin's cave, where do you go? How do you get out of the elvenking's hovel? I have got out of the dungeon by using the red key. PS. Does anyone have any information on *Jewels of Babylon*, especially how to get out of the forest? Shain Allen, Ysgubor, Crow Lane, Gt Bourton, Near Banbury, Oxon OX17 1RL.

Warlord and Mordon's Quest on Amstrad CPC464. In *Warlord*, what do you do with the Fomorian tribe? Have got 92%. What do you do with the clay pot, urn, chariot, vase and the body trapped by the timbers? In *Mordon's Quest*, need exact words to bribe guards to get out of catacombs. Can't find aqualung. Can offer help on *Red Moon*, *Message from Andromeda*, *Heroes of Karn*, *Jewels of Babylon*, *Forest at World's End* and *Seabase Delta*. Christopher Eng, 14 Armer Road, London SW11 6AA.

Heroes of Karn on Amstrad. How do I get past bear, get money, get out of dungeon, and what does Beren do? Graham Porter, 10 Westfield Drive, Yeadon, Near Leeds, Yorkshire LS19 7NP.

The Pawn on Atari 520ST. How do you open the safe and where do I find the key for the door in the ice tower? Sandra King, 10 Hole Farm Way, Hawkesley, Birmingham B8 9RW.

Adventure Helpline

Going bananas? If you are stuck in an Adventure with nowhere to turn do not despair – help is at hand.

Fill in the coupon, explaining your problem, send it to us, and a fellow adventurer may be able to help.

Remember – the system only works if those adventurers who have solved the puzzles get in touch. Every week is Save An Adventurer Today (SAAT) week!

Adventure ..... **on (Micro)** .....
Problem .....
.....
Name .....
Address .....
.....

Get writing – get Popular

Popular Computing Weekly always welcomes contributions from its readers for articles, features, and program listings.

Whether you want to write articles, see your programming masterpieces in print, pass on some words of wisdom, or simply let off steam, there's space in the magazine for you.

Ideas for **feature articles**, or completed articles, should be sent to Christina Erskine. All aspects of home computing are considered, but we cannot feasibly accept anything longer than 2,000 words, so brief is best. It's worth checking by phone or letter first that your article will be suitable. Payment is normally £35 per published page.

Technical editor Duncan Evans looks after the **program listings**, and articles on programming. We rely on you for our Programming section, so earn yourself a place in the *Popular* Hall of Fame (and £25 for each page we print) by having your program published. Even if it's not 100s of K of pure machine code, but a short snappy routine, there may well be a place for it in **Bytes and Pieces** (£10 a shot).

Articles on any aspect of programming are also welcome – with short listings included if relevant.

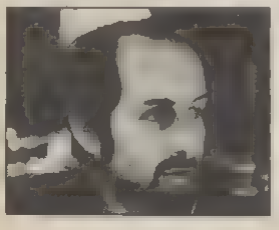
Got something you feel needs saying loud and clear? Your opinions on any aspect of the computer industry are welcomed, so why not write in to the **Ziggurat** section? No more than 600 words, please. If published, we'll pay you £15.

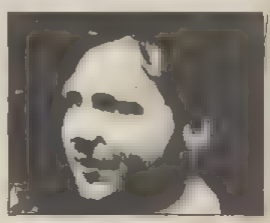
So maybe it's not the money you're after, but you'd just like to have some say in the magazine.

For shorter comments, general observations or queries, there is of course the **Letters page**, with the tempting offer of a year's supply of *Popular* binders for the Star Letter each week.

For more specific points, our team of columnists are always willing to answer questions, and keen to hear the latest information. Drop your lines to **Tony Bridge** (adventure hints always gratefully received); **Tony Kendle** (who wants as many Arcade pokes, maps, solutions, etc. as possible); **David Wallin** (communications); **Kenn Garroch** (programming problems), **Mark Jenkins** (music queries and sample tapes) and **Martin Bryant** (computer chess comments).

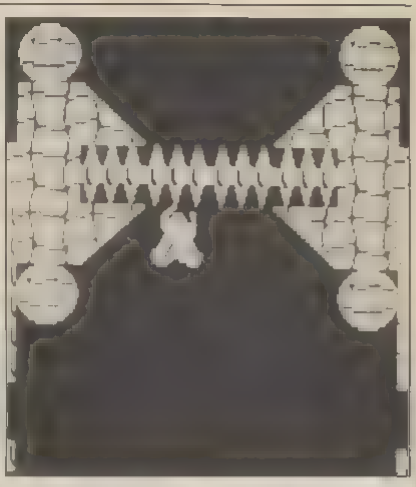
All letters should be addressed to *Popular Computing Weekly*, 12–13 Little Newport Street, London WC2H 7PP. If you mark your letters with the department you want, things get processed much more quickly.





Left: the adventurous Tony Bridge.
Right: the active Tony Kendle.

A worthy arcade adventure in Ravenskull



Hard on the heels of the superb *Repton 3*, BBC owners have another treat in store from Superior Software – *Ravenskull*.

This new release is more in the way of traditional arcade adventures, although it is graphically similar to *Repton*.

You play the hero – adventurer, wizard, warrior or elf – who has volunteered to retrieve a mystical cross from the hazardous Castle Ravenskull.

There are many puzzles to be solved – how to manipulate keys and pickaxes to gain entry to different parts of the maze – and many areas where you'll require arcade dexterity in avoiding the fast-moving guardians of Ravenskull, the dreaded Ravenbees.

You're also up against a time limit, so that you need to find food and drink to keep your strength up. But beware – some of it is poisoned.

To top off the adventure feel, there are magical potions and scrolls which may help or hinder your quest.

The graphics are clear and colourful, the animation is very smooth, and the sound effects are adequate. There's also a nicely performed background tune which will drive you nuts after one minute. Fortunately, you can turn this off.

I didn't enjoy *Ravenskull* as much as *Repton 3*, but it's still worthy of a place in your collection.

Popular Appeal ♦ ♦ ♦
Peter Worlock

Program *Ravenskull* **Micro** BBC **Price** £11.95 disc **Supplier** Superior Software, Regent House, Skinner Lane, Leeds LS7 1AX.

Trooper provides a strange mix

Here's one for the record book – a game specifically written for the 128/Plus 2. But for those drooling at the thought of some bopping the night away to the soundtrack, they are going to be disappointed and anything that beeps 'Congratulations' from time to time does not inspire confidence to being exactly state-of-the-art.

In fact, *They Call Me Trooper* is a strange mix of martial art combat and arcade adventure – the two elements being played on separate screens.

It seems that during the high-level talks for Galactic Peace, the Therop have done the dirty on all other sentient beings and put them through a brain-drain machine – turning them into 'deadly exterminators' who are out to get you, the only surviving member.

The only thing is to find parts of a space ship that are scattered around the planet and escape.

The first thing you must do is find yourself a rope and grappling hook, essential for those long drops and climbs – not too difficult as there's one on the screen immediately to the right of your starting position, but before you get that far, a green man will try and put the boot in, and off you go to the martial arts bit.

This screen looks excellent with large, single colour sprites – very impressive – in fact, this part can be played as a two-part player game apart from the main scenario.

This would be a first class game were it nor for some fundamental faults. Firstly, the terse instructions on the inlay read like they have been badly translated from the Japanese, and so are completely adequate. More importantly, with the Kempston option on, you cannot manipulate/use objects from the keyboard.

With a little more effort, *Trooper* could have been a first class effort. Instead, I suggest you file it under curio.

Popular Appeal ♦ ♦
John Cook

Program *They Call Me Trooper* **Micro** Spectrum 128/Plus 2 **Price** £8.95 **Supplier** CRL, 9 Kings Yard, Carpenter's Road, London E15 2HD.

Donkeying Around

Hands-up those of you who like Donkey Kong? Now, put your hands down if you don't expect to play it ever again? Put your hands down if you already have a version for your Commodore 64. Now put your hands down if you're not ready to pay a couple of quid for a decent budget version.

Right, those of you with your hands still up are in business. Because Ocean has just released the official conversion of the Konami arcade classic.

Yes, it is very late (about two years too late), and yes, there are tons of cheaper, not-quite-identical versions.

But this is the real thing. The graphics are almost as good as the arcade original, the sound track is perhaps a bit better. And it plays extremely well.

You don't care? Oh well.

Popular Appeal ♦ ♦ ♦
Peter Worlock

Program *Donkey Kong* **Micro** Commodore 64 **Price** £8.95 **Supplier** Ocean, Ocean House, 6 Central Street, Manchester M2 5NS.

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A joystick for your thoughts

If you committed the cardinal sin of missing last week's issue, here is a second chance to make your opinions known in the third Annual Readers' Poll.

This is your opportunity to name names and vote for your personal best and worsts of 1986 – games, utilities, programmers, hardware.

This year we've got an added incentive to get you to fill out the form. We've got 50 Konix Speed King joysticks to give away to 50 lucky entrants picked at random on the closing date.

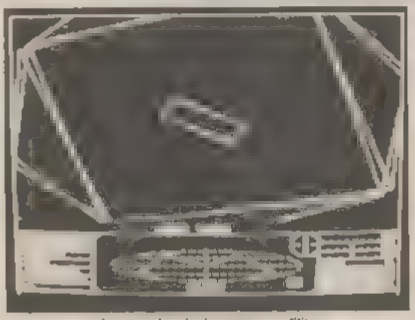
As this is an annual poll, we're looking for 1986 products only. However, anything launched in November or December 1985 should be OK, since most of their sales will have been this year.

Please write answers in the boxes below

Program of the Year (overall)

Last year's winner: *Elite* (Firebird)

This is the highest accolade you can pay a computer program, the game that had you hooked to the screen for weeks on end, or the utility which transformed your computing power, or the application which infinitely expanded your horizons.



Last year's winning program, *Elite*

Arcade Games of the Year

Last year's winner: *Elite* (Firebird)

Shoot 'em ups, arcade adventures, basically anything that you'd get the joystick out for. But which one really brought out the sweat on your brow and gave you sleepless nights?

Simulation of the Year

New category

A wide variety here – flying, martial arts, athletics, motor racing, space travel. Cast your vote for the most addictive and realistic simulation of all.

Adventure Game of the Year

Last year's winner: *Lord of the Rings* (Melbourne House)

Tingling with atmosphere, fraught with fiendish puzzles, an absorbing plot . . . we're looking for the best adventure of them all.

Business Program of the Year

Last year's winner: *Mini Office* (Database)

More people are using their micros for some form of business use, whether domestic accounts, club newsletters, or full blown spreadsheets and databases. We want to hear about the one that transformed your business.

Utility Program of the Year

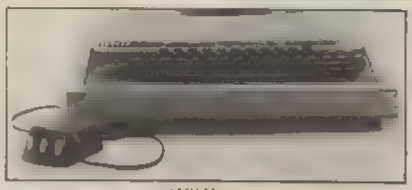
Last year's winner: *The Art Studio* (Rainbird)

Programming languages, machine code monitors, graphics aids, music composers, communications software, the list is ever increasing. In there is a gem of a program which deserves this award. Which is it?

Peripheral of the Year

Last year's winner: AMX mouse

Your chance to vote for the add-on which made you wonder how you ever survived without it.



AMX Mouse

Best Software House

Last year's winner: Melbourne House

Consistency and excellence is what we're after here. The company whose programs you look out for, because you know they're going to be great.

Best Programmer

Last year's winner: Roy Carter and Greg Follis (Gargoyle Games)

It could be their graphics, their sound, their plotlines, or the overall style. Who is the programmer, or programming team you most admire?

Most Exciting New Computer

Last year: Amstrad CPC 6128

Plenty of launches this year to choose from – the Amiga, the 128D, the 64C from Commodore, Acorn's Master series and Master compact, the Amstrad PC and Spectrum Plus 2, a new Einstein, and the games consoles are on their way back.

Most Overrated Software House

Last year: Ultimate

The advertising is brilliant. The managing director appears on *Wogan*. Your friends have life-size posters of the in-house programmers on their bedroom walls. The product packaging makes you gasp. The releases are always a disappointment. Stand up and be counted here.

Computer program you Most Regretted Buying in 1986

Last year: *A View to a Kill* (Domark)

Somebody told you it was the best thing since sliced bread. You loaded it up, trembling with anticipation . . . and what a let-down. Name names in this section.

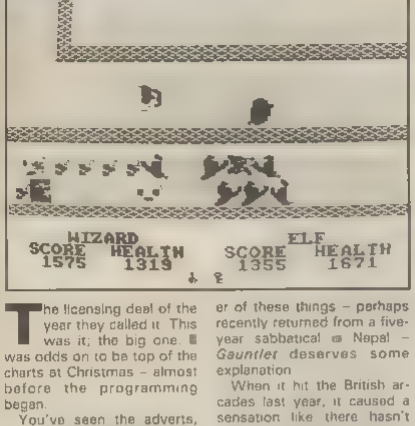
Please send in your completed poll form (if you don't feel qualified to vote in one or two of the sections, don't worry, just leave it blank) to Readers' Poll, *Popular Computing Weekly*, 12–13 Little Newport Street, London WC2H 7PP, to reach us by Wednesday, December 10. The results will be published in the issue dated December 18.

Name .....

Address .....

.....

.....



Running the Ga

The licensing deal of the year they called it. This was it; the big one. It was odds on to be top of the charts at Christmas – almost before the programming began.

You've seen the adverts, poured thousands into the arcade machine . . . in fact US Gold even give you the chance to wear the T-Shirt if you enter their 'Design a Dungeon' competition.

Now we have the finished (Amstrad CPC) version of *Gauntlet*, the home computer game.

In case you are not a follower of these things – perhaps recently returned from a five-year sabbatical in Nepal – *Gauntlet* deserves some explanation.

When it hit the British arcades last year, it caused a sensation like there hasn't been for a long, long time. It had advanced graphics and some neat digitised sound. But the real thing that had the punters queueing up was the fact that it was multi-player. Up to four players could be on the machine at any one time, each taking the role of a different character; a primitive kind of arcade *Dungeons & Dragons*. Well over 9,000 machines later *Gauntlet* established itself as an arcade smash, and so became a natural target for conversion to home micros.

The sceptics said it couldn't be done. The realists said it didn't matter how it was done, as long as it had the name Gauntlet on the cassette box.

The first of the many rumours to surround the game and its programming team (which included the opinion that the game would never make it for Christmas!) was that the idea of more than two players on screen was a no-no. Not even the might of Gremlin Graphics (subcontracted by US Gold/Centresoft to convert the thing) could weld four joystick ports on every target machine, so they've settled for the one/two player option, each player selecting their character from one of the original four: Thor the Warrior, Thyra the Valkyrie, Merlin the Wizard and Questor the Elf. Each has advantages and disadvantages.

The Elf is fast and good at using magic potions, but is a bit of a wimp when it comes to hand-to-hand combat; The Warrior throws a mean battle axe and can take quite a bit of punishment from the monsters – but can it tell his runes from his pentagrams. Note that unlike *Gauntlet II* which has just reached the arcades, only one of each character type can take part in the game.

Having made your choices, away you go and transported to Level One of the dungeon. Quite simply, each level of the dungeon is a monster-infested maze which you must hack your way through to reach an exit to a lower level. The lower the level, the harder and nastier the monsters. Death makes an appearance after a while – a black figure who can only be slain using a magic potion.

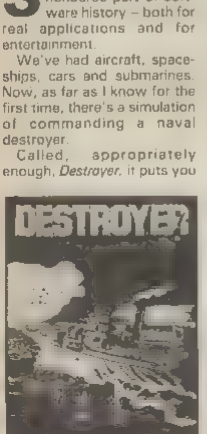
The puzzle element of the game also starts to come into play after a while – when the

Destruction in the Pacific

Simulations are a time-honoured part of software history – both for real applications and for entertainment.

We've had aircraft, spaceships, cars and submarines. Now, as far as I know for the first time, there's a simulation of commanding a naval destroyer.

Called, appropriately enough, *Destroyer*, it puts you in command of a US ship in the Pacific during World War II.

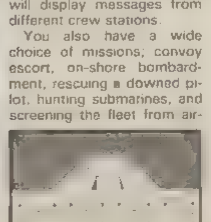


The game itself is played on ten different screens showing navigation, bridge, damage control, radar and sonar, and all your weapons systems.

You can take direct control of any of these areas, or trust your crew to handle things while you play the cool commander type.

On every screen there's a communications line which will display messages from different crew stations.

You also have a wide choice of missions; convoy escort, on-shore bombardment, rescuing a downed pilot, hunting submarines, and screening the fleet from air-raids.



Different missions have varying degrees of difficulty. A screening mission is easy since you don't have to move – you simply try to shoot down the incoming planes. Convoy escort is a real trial since you'll be up against planes, subs and enemy battleships, and you'll need to control radar, sonar and all weapons systems.

As you'd expect from Epyx, the graphics are stunning – lots of metallic control panels and winking lights. Perhaps the most impressive graphics are on the air-attack screens where enemy planes zoom in on you with stunning realism, and when shots will spin and plummet into the ocean, trailing smoke.

The major disappointment is the sound. 'Minimal' is hardly the word. When you're blasting the hell out of an enemy ship, all you hear is a pathetic "Xish, Xish" as your main five inch guns blast away.

Where are the throb of your engines, the screaming dives of Japanese Zero bombers, the boom of heavy armament and the rattle of machine guns?

The only other complaint is the inability to save your ship's log so that you start from scratch each time you play.

Had these features been included, *Destroyer* would have been a five-star classic.

As it is, it's merely very good. Nice to see Epyx back on form after the disappointing *World Games*.

Popular Appeal ♦♦♦
Peter Worlock

Program *Destroyer* **Micro** Commodore 64 **Price** £14.95 disc only **Supplier** US Gold, 2/3 Holford Way, Holford, Birmingham B6 7AX.

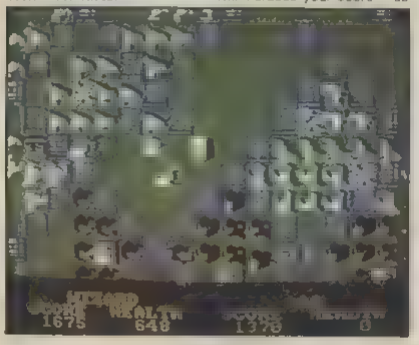
e Gauntlet

mazes get complicated and you have to start knocking down walls to get anywhere.

Time is important. You start off with 2000 strength points but the stress of being surrounded by these perils mean it's counting down the time (just like real life, mortals) and when you get hit by the opposition it goes down even faster.

Strength can be regained by collecting food found lying around the place, so playing the two player game you get to know who your friends are pretty quickly as you both make a grab for the goodies.

And no fantasy trip would be complete without treasure, would it? *Gauntlet* is no exception, and collecting it will increase your score – as



does laying into the natives.

Gauntlet the computer game passes the conversion test easily. At least as good as it could be on a home micro. Best played with two of you, shouts of Cover me, Bodiel, fill the room and it's not a bad romp as you give thousands of Evil Things exactly what's coming to them.

Gauntlet was never about intellect – just hit that fire button and take them apart. And there is the possibility that without the puzzle elements of some games of a similar genre (say, *Druid*) or the flashy effects in the stand-alone, there won't be much to hold you for a long period of time.

But make no mistake, if you want to play *Gauntlet*, no frills, on your home computer this Christmas (and although we've only seen the CPC version, there's no reason why the others shouldn't be of a similar standard) – US Gold has delivered the goods.

Popular Appeal ♦♦♦

John Cook

Program *Gauntlet* **Micro** Amstrad CPC (CBM 64, Atari XL/XE, MSX, Spectrum, ST, Amiga and PC versions to follow) **Price** £9.99 (tape) £14.99 (disc) **Supplier** US Gold, Unit 2/3, Holford Way, Holford, Birmingham B6 7AX.

Phantastic Phantasie

It's a hard life adventuring in Gelnor. Trudging back from a tiring day down the local dungeon, eagerly anticipating a good time at the local town's guild, and what jumps out, nostrils flaring? An orange dragon of all things! Chomp.

Phantasie, is the name of this game and defeating the evil sorcerer is the aim.

If you hadn't realised by now, *Phantasie* (by Strategic Simulation) is a role playing game where you create and arm a party of up to six characters from a variety of races (human, elf, gnoll etc) and classes (priest, warrior, ranger, wizard – you know the sort of thing) and set off into the countryside with the aim of searching out Nikademus and paying him his dues.

Of course it isn't that straightforward. After a few plays it appears that you only have to kill things, gain experience, pay for training to increase your hit points and skills, and find Nikademus in order to accomplish your aim. After many more hours at the keyboard the truth of the matter dawns. There is far more depth to *Phantasie* than is initially apparent. Take the matter of the rings for one thing. You have to have all nine in order to get a stab at the sorcerer, but where are they? Well, scattered about the land are various scrolls which reveal many important (and some not so) facts.

In one dungeon you have to discover the secret phrase to say to a cook when he asks you about Kilmor the dwarf. The cook tells you to say something else to Kilmor when you meet him, and when you do and quote the right words he tells you the secret number to get into the inner sanctum of the Temple of Gelnor without being vapourised. Doing this opens a secret passage way into a nearby fountain wherein lies the elusive scroll 19.

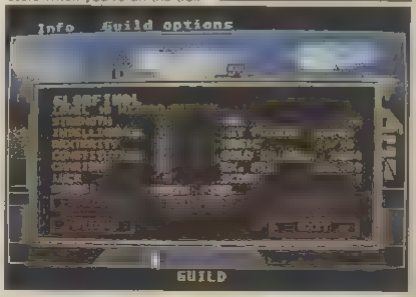
The graphics of the maps are not great, but the close ups of the party and monsters in a combat situation are very nicely done with some of the larger monsters being very impressive. Sound effects are minimal but that's to be expected in this sort of game.

If you can survive the initial battles, and put up with wading through low level monsters when you're on the trail of a vital clue, then you'll discover for yourself what an addictive and wonderful game *Phantasie* is. Now then, where did I put that Halberd?

Popular Appeal ♦♦♦♦

Duncan Evans

Program *Phantasie* **Micro** Atari ST **Price** £39.95 disc only **Supplier** Silica Shop, 1–4 The Mews, Hatherley Road, Sidcup, Kent DA14 4DX.



Teletext Designer

W D P Gumm

This utility program is used to design pictures in Teletext mode 7. Full colour, teletext graphics and text can be mixed by using a combination of the function, Shift, and Control keys to produce the appropriate control codes.

The keys used are:

Tab – pen up (flashing cursor) / down
Z – move cursor left
X – cursor right
. – cursor up
/ – cursor down
Shift – and the following
F1–F7 – alphanumeric colours
F8 – flash on
F9 – steady (default)
Control and the following :
XX XX – Xxxx xxx xxxxxx
F8 – conceal display
F9 – continuous graphics (default)
B – new background (must follow colour code)
C – clear screen
H – double height code
N – normal height
L – load new screen
S – save screen
T – enter text at cursor
Delete – delete character

It is important to note that all the control characters take up one character square so that square will be left blank. It is probably easier to draw a design in white and then carefully add the colour and text afterwards

```
  10X%=0:Y%=50
  20plot=1
  30MODE7
  40VDU23;8202;0;0;0;:REM CURSOR OFF
  50DIMSX7
  60ISX%=&0804020:REM LOOK UP TABLE TO
FIND CORRECT PIXEL
  70REM A=&40:
  80FORA=0TO24:PRINTTAB(0,A);CHR$(ASC"
"+A);:NE
  90X%=X%:Y%=Y%
 100IFINKEY-98 AND X%>0 X%=X%-1
 110IFINKEY-67 AND X%<77 X%=X%+1
 120IFINKEY-105 AND Y%>3 Y%=Y%-1
 130IFINKEY-73 AND Y%<74 Y%=Y%+1
 140key=INKEY(0)
 150IFkey=68 PRINTTAB(X%,DIV2+1,24-Y%,D
IV3+CHR$(157+X%+X%*2: Y%=Y%
 160IFkey=67 PRINTTAB(0,24)"CLS:SURE "
(Y/N)":A=GET:IFA=ASC"Y" CLS:GOTO80: ELS
EIFkey=67 PRINTTAB(0,24)STRING$(16," ");
 170IFkey=68 PRINTTAB(X% DIV2+1,24-Y% D
IV3+CHR$(157+X%+X%*2: Y%=Y%
 180IFkey=76 PRINTTAB(0,24)"LOAD "(Y/N
)":A=GET:IFA=ASC"Y" VDU28,0,24,39,24:I
NPUT"FILENAME :"file$:OSCLI"LOAD "+file
$:VDU26 ELSEIFkey=76 PRINTTAB(0,24)STRING
$(16," ");
 190IFkey=79 plot=plot+1:plot=plot MOD2
 200IFkey=127 AND key 138 OR key=143 AN
D key 154 PRINTTAB(X% DIV2+1,24-Y% DIV2)
CHR$(key);X%=X%+1: Y%=Y%
 210IFkey=127 PRINTTAB(X% DIV2+1,24-Y%
DIV3+CHR$(32); X%=X%+1: Y%=Y%
 220IFkey=72 PRINTTAB(X% DIV2+1,24-Y% D
IV3+CHR$(141+X%+X%*2): Y%=Y%
 230IFkey=73 PRINTTAB(X% DIV2+1,24-Y% D
IV3+CHR$(140+X%+X%*2): Y%=Y%
 240IFkey=83 PRINTTAB(0,24)"SAVE " (Y/N
) ":A=GET:IFA=ASC"Y" VDU28,0,24,39,24:I
NPUT"FILENAME :"file$:OSCLI"SAVE "+file
$" 7C00 7FE7":VDU26 ELSEIFkey=83 PRINTTA
B(0,24)STRING$(16," ");
 250IFkey=84 VDU28,0,24,39,24:INPUTTAB(
X% DIV2+1,24-Y% DIV3+CHR$(157+X%+X%*2)
 260IFkey=13 OR Y%<0 OR Y%>24 PROCPLOT(X%,Y%
):IFplot=1 PROCPLOT(X%,Y%)
 270PROCPLOT(X%,Y%):PROCPLOT(X%,Y%):REM
MAKE CURSOR FLASH
 280GOTO90
 290
 300DEFPROCPLOT(X%,Y%)
 310REM PLOTS A POINT IN TELETEXT MODE
 320REM WITH COORDS (X%,Y%)
 330VDU31,X%,DIV2+1,24-Y% DIV3
 340CX=&X?(!X% AND 1)*(2-Y%MOD3)*2)
 350AY=135:REM *FX135 READ CHARACTER AT
CURSOR POSITION
 360value=(USB &FFF4 AND &FF00) DIV256
OR 128
 370IFplot=1 value=value EOR CX ELSE
value=value OR CX:REM EXCLUSIVE OR PIXEL I
F NO MARD IS REQUIRED (plot=1)
 380value value
 390ENDPROC
```

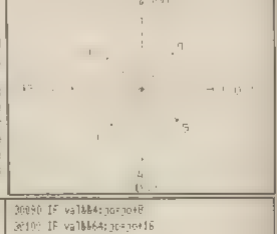

Joystick function

David Stewart

This short program will return a value from a joystick connected to Ctl 1 or Ctl 2, the values being the same for each point. There is only one parameter required for the function, the port number. *A=Joy(1)* reads Ctl 1 and *Joy(2)* reads Ctl 2.

As the Ctl ports mimic the keyboard this program will read the function keys, cursor keys and space just as well.

The following diagram illustrates which values are returned when the joystick is in each position. The cursor keys and space use *Joy(1)* while the function keys use *Joy(2)*. When the fire button is pressed add 16 to the values on the diagram.



```
1 CSIZE 0,0
10 CLS:PRINT 'Press function keys,
cursor keys,space'\
'Move  joytick in port 1 or/and 2'
20 AT 4,0:PRINT 'CTL1'..'CTL2'
30 CSIZE 3,1
40 AT 3,0:PRINT JOY(1):' ':AT
3,6:PRINT JOY(2):' '
50 GO TO 40
29997 :
29998 REMark  DAVID STEWART
29999 :
30000 DEFine FuNction JOY(port)
30010 LOCal joy,val
30020 joy=0:IF port<>1 AND port<>2
THEN RETURN 255
30030 val=KEYROW(1-(port-2))
30040 SELect ON port
30050 =1
30060 IF val&&16:joy=joy+1
30070 IF val&&2:joy=joy+2
30080 IF val&&128:joy=joy+4
30090 IF val&&4:joy=joy+8
30100 IF val&&64:joy=joy+16
30110 =2
30120 IF val&&2:joy=joy+1
30130 IF val&&16:joy=joy+2
30140 IF val&&8:joy=joy+4
30150 IF val&&1:joy=joy+8
30160 IF val&&32:joy=joy+16
30170 END SELect
30180 RETurn joy
30190 END DEFine JOY
```

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Head Control

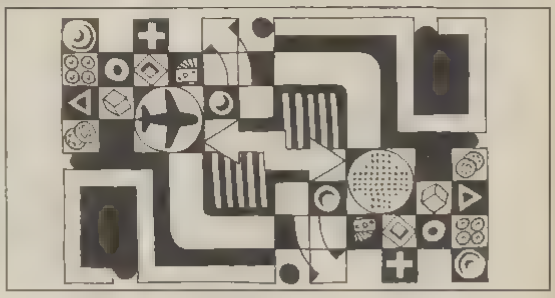
Stuart Mitchell

This program allows the headers of all Spectrum files to be redefined. On execution the menu presents three choices: load, save and amend.

Headers can be loaded and saved in the same way as normal programs.

Amending the header is a simple process of redefining its characteristics. This includes, length, type of file, start address, auto-run line and filename.

The program has many uses, one of which is stopping target programs from automatically running.



```
   1 REM HEAD CONTROL
   2 REM  STUART MITCHELL
   3 REM
  10 BORDER 0: PAPER 0: INK 7: CLS
  20 CLEAR 63999
  [illegible] GO TO 9000
  40 LET Z$=CHR$ 22+CHR$ 10+CHR$ 0+"POSI
TION TAPE,THEN PRESS ANY KEY"
 100 PRINT AT 0,9;"HEAD CONTROL"
 110 PRINT AT 5,0;"1","LOAD HEADER":AT 7
,0;"2","SAVE HEADER":AT 9,0;"3",CHR$ 8;"
AMEND HEADER"
 120 PRINT AT 21,0;" Stuart Mitchell S.
U.C.software"
 125 PRINT AT 15,0;"CURRENT>":: FOR n=64
001 TO 64010: PRINT CHR$ PEEK n;: NEXT n
 130 LET a$=INKEY$: IF a$<"1" OR a$>"3"
THEN  GO TO 130
 132 IF INKEY$<>"" THEN  GO TO 132
 135 CLS
 140 IF a$="1" THEN  GO TO 1000
 150 IF a$="2" THEN  GO TO 2000
 160 IF a$="3" THEN  LET C=2: [illegible] TO 3000
1000 PRINT Z$
1010 IF INKEY$="" THEN  GO [illegible] 1010
1020 PRINT AT 21,12: FLASH 1: BRIGHT 1;"
LOADING"
1030 RANDOMIZE USR 64100
1040 CLS : GO [illegible] 100
2000 PRINT Z$
2010 IF INKEY$="" THEN  GO TO 2010
2015 PRINT AT 21,11; FLASH 1; BRIGHT 1;"
RECORDING"
2020 RANDOMIZE USR 64200
2030 GO TO 1040
2500 DATA "PROGRAM","NUMERIC ARRAY","CHA
R ARRAY","BYTES"
3000 CLS : PRINT AT 0,10;"HEAD DETAILS"
3010 PRINT AT 2,0;"CURRENT>":: FOR n=640
01 TO 64010: PRINT CHR$ PEEK n;: NEXT n
3020 PRINT AT 4,0;"TYPE    ":
3030 RESTORE 2500: FOR N=0 TO (PEEK 6400
0): READ A$: NEXT N: PRINT A$
3040 LET F=N-1
3050 PRINT AT 6.0:"DATALEN>";PEEK 64011+
256*PEEK 64012
[illegible] IF F=1 OR F=2 THEN  GO TO 3200
3070 LET S=PEEK 64013+256*PEEK 64014
3080 IF F=0 AND S<=9999 THEN  PRINT AT 8
,0;"RUNLINE>";S
3085 IF F=0 AND S>9999 THEN  PRINT AT 8,
0:"RUNLINE >"
3090 IF F=3 THEN  PRINT AT 8.0:"ST ADDR>
";S
3100 IF F=0 THEN  PRINT AT 10.0:"PROGLEN
>";PEEK 64015+256*PEEK 64016
3210 PRINT AT 20,12:"ZERO>MENU":AT 21.0:
"CURSOR> SPACE       SELECT> ENTER"
3220 PRINT AT C,21: INVERSE 1;"<"
3225 IF INKEY$<>"" THEN  GO TO 3225
[illegible] IF INKEY$=CHR$ 13 THEN  GO TO 3300
[illegible] THEN  CLS : GO TO 100
3240 IF INKEY$<>" " THEN  GO TO 3230
3250 PRINT AT C,21;" ": LET C=C+2: IF (C
=8 AND (F=1 OR F=2)) OR (C=10 AND F=3) O
[illegible] (C=12 AND F=0) THEN  LET C=2
3260 GO TO 3220
3270 POKE 23617,158: INPUT "NEW FILENAME
": INVERSE 1;":": INVERSE 0; LINE A$
3280 IF A$="" OR LEN A$>10 THEN  GO TO 3
270
3290 LET A$=A$+"          "( TO 10-LEN A
$): FOR n=1 TO 10: POKE 64000+n,CODE A$(
n): NEXT n
3295 [illegible] TO 3000
3300 IF C=2 THEN  GO TO 3270
3310 IF C<>4 THEN  GO TO 3350
3320 LET V=PEEK 64000: LET V=V+1: IF V=4
THEN  LET V=0
3330 POKE 64000,V: [illegible] TO 3000
3350 IF C<>6 THEN  GO TO 3400
3360 POKE 23617,158: INPUT "NEW DATA LEN
GTH": INVERSE 1;":"; INVERSE 0;V
3370 IF V<0 OR V>65535 THEN  GO TO 3360
3380 POKE 64011,V-256*INT (V/256): POKE
64012,INT (V/256)
3400 IF C<8 THEN  GO TO 3000
3405 IF C=10 THEN  GO TO 3500
3410 IF F=0 THEN  GO TO 3450
3420 POKE 23617,158: INPUT "START ADDRES
S"; INVERSE 1;">"; INVERSE 0;V
3430 IF V<0 OR V>65535 THEN  GO TO 3420
3440 POKE 64013,V-256*INT (V/256): POKE
64014,INT (V/256)
3445 [illegible] TO 3000
3450 POKE 23617,158: INPUT "AUTO START (
""-"" MEANS NONE)"; INVERSE 1;">"; INVER
SE 0; LINE V$
3460 IF V$="-" THEN  LET V=32819: GO TO
3480
3465 IF V$="" OR LEN V$>4 THEN  GO TO 34
50
3470 LET V=VAL V$
3480 POKE 64013,V-256*INT (V/256): POKE
64014,INT (V/256)
3490 GO TO 3000
3500 POKE 23617,158: INPUT "NEW PROG/VAR
S LENGTH": INVERSE 1;">"; INVERSE 0;V
3510 IF V<1 OR V>9999 THEN  GO TO 3500
3520 POKE 64015,V-256*INT (V/256): POKE
64016,INT (V/256)
3530 GO TO 3000
8999 STOP
9000 DATA 221,33,0,250,17,17,0,175,55,19
5,86,5: REM LOAD DATA
9010 LET t=0: RESTORE 9000: FOR n=64100
TO 64111: READ a: LET t=t+a: POKE n,a: N
EXT n
9020 IF t<>1054 THEN  CLS : PRINT AT 0,0
;"ERROR IN LOAD DATA!": STOP
9030 DATA 221,33,0,250,17,17,0,175,195,1
94,4: REM SAVE DATA
9040 LET t=0: RESTORE 9030: FOR n=64200
TO 64210: READ [illegible] LET t=t+a: POKE n,a: N
EXT n
9050 IF t<>1106 THEN  CLS : PRINT AT 0,0
;"ERROR [illegible] SAVE DATA!": STOP
9060 [illegible] TO 40
```

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Sembler

Robert Osborne

With the cold winter nights now upon us what could be nicer than warming your hands over a hot computer. Sembler, will give you that opportunity with its combination of assembler and disassembler.

On running the program a prompt will be displayed. The three letter commands that are used are given below.

Ass – puts you into assembler mode.

Dis – puts you into the disassembler mode.

Let – waits for a string to be input. It then outputs the *Ascii* value of each character in hex and decimal.

Cal – asks for number then calls the routine at that address.

Hex – converts a decimal number to hex.

Dec – converts a hex number to decimal.

When the assembler routine is in use the start address can range from 9000 to 49152 (&C000). When entering data or mnemonics make sure that there is a space betweent he mnemonics and the numbers (which can be entered in decimal or hex). Press enter at the end of every line and to finish assembling press enter again.

The second and final part of the listing will be published next week.

```
10 DIM T$(8),MNE$(255),TYPE(255):FOR I=0
 TO 63:READ MNE$(I):NEXT I
20 FOR I=0 TO 7:READ T$(I):NEXT
30 WINDOW 1,40,1,25:INK 2,15
40 K=0:FOR I=64 TO 127 STEP 8
50 FOR J=1 TO I+8
60 MNE$(J)="LD "+T$(K)+","+T$(J-I)
70 NEXT J:K=K+1:NEXT I
80 MNE$(118)="HALT"
90 FOR I=128 TO 191 STEP 3
100 READ A$:FOR J=0 TO 7
110 MNE$(I+J)=A$+T$(J)
120 NEXT J,I
130 FOR I=192 TO 255:READ MNE$(I):NEXT I
140 FOR I=1 TO 255
150 R$=RIGHT$(MNE$(I),LEN(MNE$(I))-3)
160 IF R$="BC" OR R$="DE" OR R$="HL" OR
R$="SP" THEN TYPE(I)=2
170 R$=LEFT$(MNE$(I),2):IF R$="JP" OR R$
="CA" OR R$="RS" THEN TYPE(I)=2
180 NEXT I
190 TYPE(&C7)=0:PEN 3:CLS:PRINT TAB(15)"
Sembler V2.0"
200 PRINT TAB(12)"By Robert Osborne."
210 PRINT TAB(9)CHR$(164)" Unicorn Soft
ware 1986."
220 WINDOW 1,40,5,25:CLS
230 PEN 2:PRINT ">";:PEN 1:INPUT "",A$:A
$=UPPER$(LEFT$(A$,3))
240 PEN 2:IF A$="ASS" THEN 310
250 IF A$="LET" THEN PRINT "Letters>";:P
EN 1:INPUT "",A$:FOR I=1 TO LEN(A$):B$=M
ID$(A$,I,1):PRINT B$,ASC(B$),"&"+HEX$(AS
C(B$)):NEXT I:GOTO 230
260 IF A$="CAL" THEN PRINT "Call";:PEN
1:INPUT "",A$:CALL VAL("&"+A$):GOTO 230
270 IF A$="HEX" THEN PRINT "Hex>";:PEN 1
:INPUT "",A:PRINT "&"+HEX$(A):GOTO 230
280 IF A$="DEC" THEN PRINT "Decimal ";:P
EN 1:INPUT "&",A$:PRINT VAL("&"+A$):GOTO
 230
290 IF A$="DIS" THEN GOTO 910
300 PRINT "Do what?";:PRINT:GOTO 230
310 REM ASSEMBLER
320 PRINT"Assembler"
330 PRINT "Start>";:PEN 1:INPUT "",A$
340 PRINT:A=VAL(A$)
350 IF A<0 THEN A=65536+A
360 IF A<9000 THEN PEN 2:PRINT "Too low"
:GOTO 330
370 IF A>49152 THEN PEN 2:PRINT "Too hig
h":GOTO 330
380 FOR P=A TO 43900
390 T=0:C1$="":C$="":B$=""
400 PEN 2:PRINT P;TAB(10)"&"HEX$(P);TAB(
20)
410 PEN 1:LINE INPUT "",A$:A$=UPPER$(A$)
420 IF VAL(A$)>0 THEN POKE P,VAL(A$):GO
TO 740
430 IF A$="" THEN GOTO 230
440 FOR I=0 TO 255:IF A$=MNE$(I) OR A$+"
"=MNE$(I) THEN POKE P,I:T=1:I=255
450 NEXT I
460 IF T=1 THEN GOTO 740
470 C$="":FOR I=1 TO LEN(A$)
480 IF C$=" " AND MID$(A$,I,1)<>" " AND MI
D$(A$,I,1)<>":" THEN C1$=C1$+MID$(A$,I,1)
:T=1
490 IF MID$(A$,I,1)="&" THEN C$=MID$(A$,
I,5):T=I+4
500 NEXT
510 IF C1$<>"" THEN C$="&"+HEX$(VAL(C1$)
)
520 WHILE LEN(C$):IF LEFT$(C$,1)<>"&" THEN
 C$="&"+HEX$(VAL(C$))
530 C$=RIGHT$(C$,LEN(C$)-1):IF LEN(C$)<5
 THEN FOR I=LEN(C$)+1 TO 5:C$=C$+"0":NEX
T I
540 D$=C$:B$=LEFT$(A$,X)+"@"+RIGHT$(A$,L
EN(A$)-T)
550 FOR I=33 TO 58:IF B$=MNE$(I) THEN GO
SUB 750
560 NEXT I
570 IF T=1 THEN GOTO 740
580 B$="":FOR I=1 TO LEN(A$)
590 IF MID$(A$,I,1)="," OR MID$(A$,I,1)=
" " THEN I=200:GOTO 610
600 B$=B$+MID$(A$,I,1)
610 NEXT I
620 X=0:FOR I=1 TO 255
630 IF B$=MNE$(I) AND TYPE(I)=2 OR B$+"
"=MNE$(I) AND TYPE(I)=2 THEN GOSUB 750
640 IF B$+" "=MNE$(I) THEN X=I
650 IF B$=MNE$(I) THEN X=1
660 NEXT I
670 IF T=1 THEN GOTO 740
680 IF X=0 THEN PEN 2:PRINT "That is not
 an op-code.";END:GOTO 390
690 IF MID$(B$,1,2)="JR" OR MID$(B$,1,2)
="DJ" THEN C=VAL("&"+C$):GOTO 760
700 POKE P,X
710 IF VAL("&"+C$)>255 THEN PEN 2:PRINT
"Can't be done.";:GOTO 390
720 POKE P+1,VAL("&"+C$)
730 P=P+1
740 NEXT
750 POKE P,I:POKE P+1,VAL("&"+MID$(C$,LE
N(C$)-1,2)):POKE P+2,VAL("&"+MID$(C$,LEN
(C$)-3,2)):P=P+2:T=1:RETURN
760 IF P-128>C OR P+127>C THEN POKE P,X
ELSE PEN 2:PRINT "Can't be done.";END:GO
TO 390
770 IF C<256 THEN POKE P,C:GOTO 800
780 IF C >P THEN POKE P+1,C-P
790 IF C<P THEN POKE P+1,256-(P-C)
800 P=P+1:GOTO 740
810 DATA NOP,LD BC,"LD (BC),A",INC BC,IN
C B,DEC B,LD B,RLCA,"EX AF,AF'","ADD HL,
BC","LD A,(BC)",DEC BC,INC C,DEC C,LD C,
RRCA
820 DATA DJNZ,LD DE,"LD (DE),A",INC DE,I
NC D,DEC D,LD D,RLA,"JR ","ADD HL,DE","L
D A,(DE)",DEC DE,INC E,DEC E,LD E,RRA
830 DATA JR NZ,LD HL,"LD (@),HL",INC HL,
INC H,DEC H,LD H,DAA,JR Z,"ADD HL,HL","L
D HL,(@)",DEC HL,INC L,DEC L,LD L,CPL
```

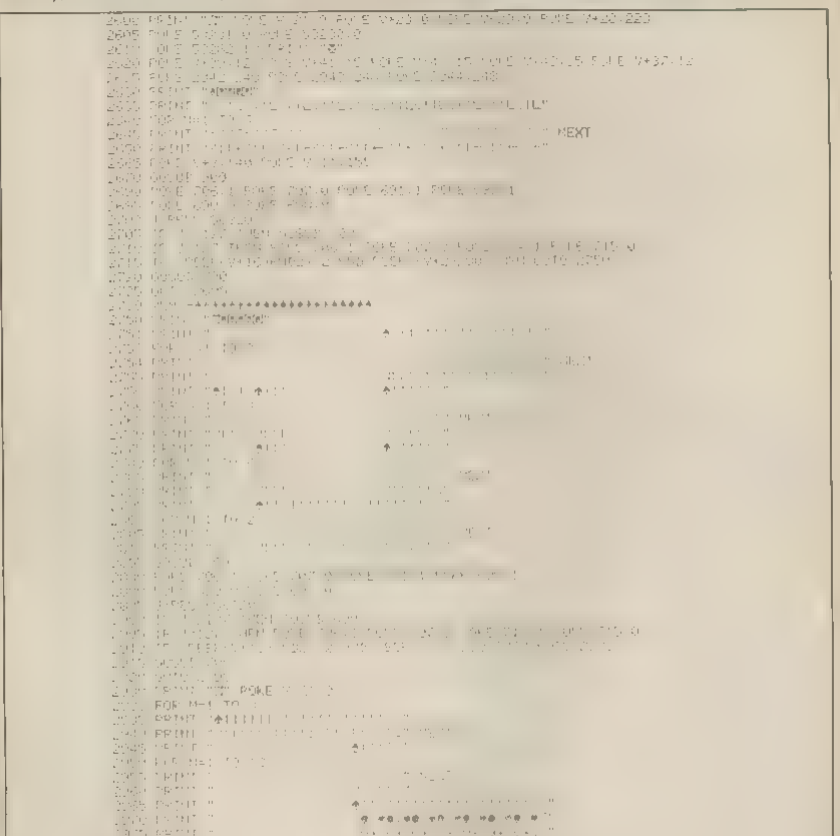
UFO – the final frontier

Steven Pattullo

And now, at long last, your chance to save the universe in UFO. When you are on the title screen press I for further information.

All of the sprites are handled by an interrupt driven machine code routine located at im memory at 49152

If you would like a copy of UFO on cassette then send £2 to Steven Pattullo, 34 Birchfield Road, Widnes, Cheshire WA8 7SU.



```
3130 PRINT "SIT MAN'S [illegible]"
3140 PRINT "[illegible] [illegible]"
3150 PRINT "[illegible]"
3160 IF [illegible] THEN [illegible]
3170 [illegible]
3180 [illegible]
3190 [illegible] POKE 54140 POKE [illegible]
3200 [illegible]
3210 [illegible]
3220 [illegible]
3230 [illegible]
3240 [illegible]
3250 [illegible]
3260 [illegible]
3270 [illegible]
3280 [illegible]
3290 [illegible]
3300 [illegible]
3310 [illegible]
3320 [illegible]
3330 [illegible]
3340 [illegible]
3350 [illegible]
3360 [illegible]
3370 [illegible]
3380 [illegible]
3390 [illegible]
3400 [illegible]
3410 [illegible]
3420 [illegible]
3430 [illegible]
3440 [illegible]
3450 [illegible]
3460 [illegible]
3470 [illegible]
3480 [illegible]
3490 POKE V+40 [illegible]49300
3500 [illegible]
3510 [illegible]
3520 [illegible]
3530 [illegible]
3540 [illegible]
3550 [illegible]
3560 PRINT [illegible] "DEPTH"
3570 PRINT [illegible] "[illegible] EFFORT"
3580 IF [illegible] THEN GOTO [illegible]
3590 IF [illegible] THEN GOTO [illegible]
3600 [illegible]
3610 PRINT "[illegible]"
3620 [illegible]
3630 [illegible]
3640 [illegible]
3650 [illegible]
3660 [illegible]
3670 [illegible]
3680 GOTO [illegible]
3690 PRINT "[illegible]"
3700 POKE [illegible]
3710 [illegible]
3720 [illegible]
3730 [illegible]
3740 [illegible]
3750 [illegible]
3760 [illegible]
3770 [illegible]
3780 [illegible]
3790 [illegible]
3800 [illegible] POKE V,90:POKE V+21 [illegible]
3810 [illegible]
3820 IF PEEK([illegible]) THEN [illegible]
3830 [illegible]
3840 [illegible]
3850 [illegible]
3860 [illegible]
3870 [illegible]
3880 POKE V+21,0:POKE[illegible]
3890 PRINT "[illegible]HELL I'VE SPARE SPIDER'S[illegible]"
3900 PRINT "[illegible] KEEP TRYING [illegible]"
3910 IF PEEK([illegible]) THEN GOTO [illegible]
3920 POKE V+16,0:PRINT "[illegible]"
3930 RETURN
10000 DATA 0,0,0,47,192,255,255,255,192,47,192,192,63,0,192,63,192,192,47,192,192
10010 DATA 47,192,192,47,192,255,255,255,192,47,192,255,255,255,192,47,192,192
10020 DATA 192,63,192,192,47,192,192,47,192,192,63,192,192,47,192,192
10030 DATA 47,192,192,47,192,255,255,255,192,47,192,192
10085 POKE V+27,0
10090 DATA -1,-1,-1
9999.
```

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Clock

R Thomas

These two routines for the Spectrum will set up a clock facility. Use *Gosub 9000* to first set the clock and thereafter, *Gosub 9006* to print the time.

The lines can be renumbered and *Merged* into your own programs.

```
9000) REM setclock
9001 CLS : PRINT  INVERSE 1;" SET CLOCK",: INPUT "HOURS ";H,"MINS ";M,"SECS ";S
9002 LET V=50*(H*3600+M*60+S): LET DP=(V-65536*INT (V/65536))
9003 POKE 23672,(DP-256*INT (DP/256)): POKE 23673,INT (DP/256): POKE 23674,
INT (V/65536)
9004 RETURN
9005
9006 REM time
9007 LET T=PEEK 23672+256*PEEK 23673+65536*PEEK 23674:
9008 LET T=T/50: LET HR=INT (T/3600): LET MIN=INT ((T-HR*3600)/60): LET SEC=INT
(T-HR*3600-MIN*60)
9009 PRINT AT 1,23;HR;":";MIN;":";SEC,
9010 RETURN
```

Variables

R Thomas

This subroutine for the Spectrum lists all the variables currently in use. To use effectively the routine, *Merge* it with your Basic program and then enter *Goto 9705*.

```
9705) LET VARS=PEEK 23627+256*PEE
K 23628:FOR I=VARSTO 65535:LET B
YTE=PEEK I:IF BYTE=128THEN PRINT
 "END OF VARIABLES.":STOP
9706 IF BYTE(=90 THEN  PRINT CHR
$ (BYTE-64+96);"$": LET I=I+(PEE
K (I+1)+256*PEEK (I+2)+2): NEXT
I
9707 IF BYTE(=122 THEN  PRINT CH
R$ (BYTE): LET I=I+5: NEXT I
9708 IF BYTE(=154 THEN  PRINT CH
R$ (BYTE-128+96);"(": LET I=I+(
PEEK (I+1)+256*PEEK (I+2)+2): NE
XT I
9709 IF BYTE(=186 THEN  PRINT CH
R$ (BYTE-160+96);: GO SUB 9712:
LET I=I+5: NEXT I
9710 IF BYTE(=218 THEN  PRINT CH
R$ (BYTE-192+96);"$(": LET I=I+
(PEEK (I+1)+256*PEEK (I+2)+2): N
EXT I
9711 PRINT "FOR ";CHR$ (BYTE-224
+96): LET I=I+18: NEXT I
9712 FOR J=I+1 TO I+100: LET SBY
TE=PEEK J: IF SBYTE)=129 THEN  L
ET SBYTE=SBYTE-128: PRINT CHR$ S
BYTE: RETURN
9713 PRINT CHR$ SBYTE;: NEXT J
```

Multi Colour Pause

Michael Davies

This routine for the Vic 20 creates a multicolour border around the Vic screen while waiting for a key to be pressed. Applications include for use on title pages etc. The routine is called from within the program using a *Sys 828* command.

Lines 1 to 4 contain the machine code, lines 5 to 7 merely show what is possible.

```
1 DATA173,15,144,133,99,41,248,133,100,166,100,
142,15,144,162,3,160,23,136,208,2 53
2 DATA202,208,248,165,197,201,64,208,14
,174,15,144,138,229,100,201,7,240,225
3 DATA232,76,71,3,165,99,141,15,144,96
4 C=0:FORA=828TO877:READB:POKEA,B:C=C+B:
NEXT:IFC<>6620THENPRINT"ERROR":STOP
5 POKE36865,60:POKE36867,142:POKE36879,8
6 PRINT"□□■   COLOURFUL BORDER        □(C)
12 JULY 1986          □BY  M.J.DAVIES":POK E198,0
7 SYS828:POKE198,0:POKE36865,38:POKE36867
,174:PRINT"□■":POKE36879,27
```

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Alternatively, send in your short programs to the Bytes and Pieces page – what could be easier?

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With Kenn Garroch

Random queries

Alun Hyde, of Nuneaton, Leicestershire, writes:

Q I am currently writing a computer game that requires random movements and I would like to know how to generate random numbers.

A Computers, being what they are, cannot generally generate truly random numbers. The closest they can get is so-called pseudo random sequences. These are sets of numbers that are only random for a certain period, after which they repeat. A simple way of creating these is as follows:

1) take an 8-bit number

2) look at bits 2 and 7 and exclusive or their values

3) rotate the 8-bit value left (times two) and stick the result of the XOR in as the new first bit.

Take 01001001 bits 2 and 7 are 0 and 1. The exclusive OR of these is 1 so the original times two ■ 10010010 and with the new first bit is 1 so the result is 10010011. Continually doing this will give a pseudo binary random sequence. A simple machine code program to do this in 6502 is shown below. RNUM is the starting number or seed, watch out for values such as 0 or 128 which won't work. If you need a longer sequence, use two or more bytes in and take the 15th or greater bit.

```
RNUM  BYTE $A5
RAND  LDA #2
      BIT RNUM
      BNE B2SET
      LDA #64
      BIT RNUM
      BNE B7SET
      CLC
      ROL RNUM
      RTS
B2SET LDA #64
      BIT RNUM
      BNE B27SET
      SEC
      ROL RNUM
      RTS
B7SET SEC
      ROL RNUM
      RTS
B27SET CLC
      ROL RNUM
      RTS
```

The disc drive dilemma

T Johnstone of Wellingborough, Northamptonshire, writes:

Q I have had my BBC Micro for some time now and have finally decided that it is worth upgrading to a disc system. What I would like to know ■ if there are any advantages in going for a 3½ inch drive rather than the more normal 5¼ inch system.

A As far as storage capacity goes, there is little difference between the two standards. The 3½ inch diskettes have the advantage that they are a lot more durable than their 5¼ inch counterparts. You can throw them around the room (if you feel the urge) without damaging them and they are small enough to fit into a top pocket.

5¼ inch discs are not as tough but they are a lot more standard for the BBC. Almost all of the commercial software available for the machine comes on 5¼ inch discs and they cost about half the price of blanks. So unless you are not going to purchase software, you are far better off going for a 5¼ inch disc drive than the more modern and compact 3½ inch.

Fractal graphics for the CPC

J Adamson of York, Yorkshire, writes:

Q I am a relative newcomer to computers having used one at work, and recently bought an Amstrad CPC 6128. I have seen the word Fractal mentioned in the computer press quite frequently. My question is, what is one of these and what are they used for?

A A Fractal is the mathematical concept of an object having fractional dimensions. For instance, a line connecting two points has one dimension, a set of lines side by side in a plane have two dimensions, three dimensions is obtained by stacking a set of planes on top of each other to form a solid.

Alternatively, rotate the line around its center and it describes a plane, rotating the plane at right angles to its other two dimensions describes a solid.

Normal mathematical geometry treats dimensions as being continuous so a length is measured as having a specific size and it describes the thing as a whole.

Fractal geometry treats things in a different way by describing the dimension or shape in terms of how closely it is examined. For example, take a map of an island, and examine the coast. As you get closer and closer, the coast becomes more detailed ■ you then take a larger scale map of the same area, the detail increases.

Taking this to its extreme, you could go ■ the place itself and look at the detail which is still as complex and can be said to have a fractional dimension since it is never absolutely defined.

The same idea can be applied via some mathematical formulas such as the famous Mandelbrot set; no matter how closely you look, or in the case of a formula, evaluate ■, there is always more detail to be revealed. An example is the square root of 2 or the value of π. If you extract the square root of 2, no matter how many times you work it out, you will be able to add more decimal places, effectively describing the value in more and more detail.

The same method can be applied to a formula that describes the shape of an object, the more you evaluate certain portions, the more detail will be revealed. Just like drawing a map in more and more detail but without ever running into problems with the resolution of the paper.

As for uses, Fractals can be used to produce pretty patterns, or they could be used in a computer game to allow 'zoom in' effects. This cuts down the amount of data that needs to be stored about an object, all that is needed is the formula which needs to be evaluated a specific number of times to get the required detail.

Other than that, Fractals are, to a certain extent, nothing more than a mathematical curiosity arising from the fact that computers can perform the many calculations necessary to produce them.

Because of this last aspect, they are frequently used to demonstrate the speed of a computer. To produce a section of the Mandelbrot set can take a day or so with a normal home micro, but on something like a transputer, the same thing can be done in seconds.

For additional, and more indepth information on this subject, the following will provide it:

Musical Fractals, *Byte*, June 1986

Personal Computer World, December 1986.

The Fractional Geometry of Nature by B B Mandelbrot, W H Freeman.

Advanced Graphics with the Commodore 128, Macmillan

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Trading on adventure

David Wallin takes a techno-fresh view on the game of life

On the Bulletin boards scene, I've been asked to mention one, which although not new is worth a look at

Techno Fresh Systems is about a year old and based in Wales. It has all the usual features of telesoftware, messaging, Sigs, etc, and has just recently started two on-line games. One is a simple higher/lower gambling game (no real money involved – apart from your phone bill); the other is called *Hammurabi – Game of Life*, a trading game.

Techno Fresh is planning to implement an on-line adventure, once it has made some extensive software modifications to the board. The adventure will be called *Southpool Seaside Adventure*, and is being written by co-sysop Keith Anderson.

BBC owners will receive all the Techno Fresh menus in mode 7 colour – this is not viewdata but BNI protocol, 40 columns, scrolling colour graphics and text. The character set is roughly the same as viewdata's.

Users may write and upload articles and reviews for publication on the board and sysop Llew Dickinson says that he is willing to help prospective sysops and give advice if need be.

> *"Techno Fresh is planning to implement an on-line adventure by co-sysop Keith Anderson"*

Techno Fresh is on 0570 423082, 24 hours on 300/300 baud. If you want 1200/75, ring 0570 922501 to ask for it verbally.

Marctel, run by Marcus Anselm, is also known as FBBS HQ, as it was Marcus who wrote FBBS for the BBC. Following a *Popular* Communications column on FBBS, William Holmes then attempted to set up Q-Board using FBBS with Le Modem and disaster followed disaster. My faith in FBBS dropped rapidly, but I now hear that having got hold of a Demon modem, William is on-line (as Musictel Plus 0843 590000) and there are far fewer problems. So if you want to set up a board using FBBS, we're now recommending the Demon modem.

A Rom version of the main machine code of FBBS is now available as well as a disc version. For more details contact Marcus Anselm at Marctel on 01-346 7150, 1200/75 and 300/300 (24 hours).

Neal Birkett has written to me to ask which modem to use for linking his Commodore Amiga to Prestel and other boards. He has been advised to get either a WS2000 or a Nightingale. My personal choice would be the WS2000, but Neal, if you can afford an Amiga, you can probably also afford a Series 4 modem from Pace Micro Technology (ranging from £150–£620), or a WS3000/WS4000 from Miracle Technology. Anyone who has the means to buy a modem at over £150 would be well advised to get an intelligent modem, Hayes compatible if possible (the WS3000 and 4000, and the Series 4 are all Hayes modems).

Pace can be reached at Allerton Road, Bradford BD15 7AG (0274 488211) and Miracle Technology on 0473 2161.

Varying shades of MUD

You may remember that in *Popular*, August 21, we looked at *Gods and Shades*, two independent multi-user on-line adventures. *Shades* has now been taken over by Micronet 800, and has been up and running on Micronet for the last couple of weeks.

Shades is very similar to *MUD* in plot. You adopt a chosen persona, and starting as a novice, travel through a series of caves to reach the enchanted land of Shades.

There you'll be called upon to negotiate moated castles, a ruined city complete with explorable sewers below among many locations. Your objective, as in *MUD* is to find and collect as much treasure as possible and deposit it to the mad king's room.

All along the way you can interact with the other players, amicably or otherwise. As in *MUD*, the wizards have powers beyond those of ordinary players, and can make life difficult for you if they so wish. You'll also need to look out for computer-generated nasties: rats, robots, and so on. Encounters with these can prove fatal.

Shades can be found on Micronet 800, page *8118#. It costs 97 pence per hour to play, and is open 24 hours a day. Up to 64 people can play simultaneously, so you should be able to log on OK. The game is reset every hour, so that the treasure doesn't all end up in the mad king's room too quickly.

Details of how to subscribe to Micronet can be obtained on 01-278 3143.

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Cheetah's cheaper

Mark Jenkins with a new Midi keyboard and products for the Spectrum and BBC

Cheetah Marketing continues to amaze the combined worlds of micros and music with the latest in a long line of products following on from their successful SpecDrum and AmDrum.

Now Cheetah has launched the MK5, a controller keyboard intended for use with any Midi product. The MK5 is equally suited to playing a micro-based sampler, controlling a synth, or programming notes into a micro-controlled Midi sequencer system.

The keyboard has five octaves of full-sized keys and has a firm, pleasant action combined with tough all-metal construction. The hardware is manufactured in Italy and is completed by a three-figure LED display, sideways-mounted sprung pitch bend wheel, play/program button and four small LEDs.

Connections are very simple – a Midi Out socket and an input for the external 9V power supply which is included in the package. The keyboard isn't velocity sensitive and lacks a modulation wheel, facts which will lose you a few facilities on even the cheapest synthesisers, but a fully-featured velocity sensitive control keyboard with the same full sized keys would cost at least three times more than the Cheetah.

Several additional control functions are carried out by the Cheetah's top octave of keys when you switch over into *Program* mode. Pushing the program/play button lights up the Program LED, and you then have a choice of increasing or decreasing the Midi transmission channel (1–16), the octave of the whole keyboard (1, 0, –1), or the program number transmitted (1–128) with different pairs of keys. If you want to actually carry out a patch change on any connected synthesiser, you then have to hit the key marked *Transmit*, and go back to *Play* mode before carrying on.

Incidentally, any keys held when you go into *Program* mode will continue to sound, so this button acts as a sort of *Hold* function, although it would be better to have this function also available on a footswitch (it should be pretty easy to connect a footswitch across the play/program button, but it'll invalidate your 12 month guarantee).

The handbook suggests several possible uses for the MK5 – playing Midi synths or modules, programming Midi sequencers or computers via a Midi interface (or directly in the case of the Midi-equipped Atari 520). The alternative application is in playing the sound chip of an Amstrad or Spectrum 128k or Plus 2 via the optional mini-interface (£29.95) and software package. The interface box has a Midi In lead from the keyboard, an edge connector for the computer, and software which can be transferred to microdrive if you wish.

The Mini Interface software lets you edit and play sounds on the AY-3-8910 sound chip using the MK5, and a sophisticated system of windows and menus controls all the functions. 64 sound patches can be stored in the Spectrum's memory, simultaneously, three voices can be played at once, and an optional split point can be set two octaves from the bottom of the keyboard. The software allows you to define a seven-stage volume envelope, a pitch envelope, repeat delay/rate, noise mix, tremelo speed/depth/delay, and pitch bend wheel on/off. Sound settings can be saved to tape or microdrive.

If you have a Spectrum, starting with the Mini interface and software is a good idea, and will give you a reasonable idea of what could be done with a more advanced synthesiser. When you do want to move up, the Korg EX800 Expander is a useful, keyboardless, six-note polyphonic synth module with a simple built-in sequencer, while the Casio CZ-101 will offer eight-note chords or four different monophonic sounds simultaneously under the control of a hardware or software sequencer package.

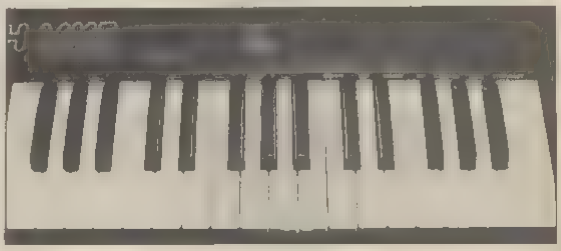
What you're lacking on the Cheetah – velocity sensitivity, modulation and fast program changes – is more than made up for by the cheapness of the keyboard and the fact that it gives five octaves (expandable to seven with the octave switching) of Midi control over synths which may have four octave of miniature keys, or no keys at all.

On to the BBC Micro, existing owners will be pleased to learn that there's a new version of the best BBC Midi interface, the UMI-2B from Soft Rock Systems. It's called the UMI-3B, and is a cut-down version of the 2B with one Midi In and two Midi Out sockets, Clock or Sync In and Out, Sync-24 Out for Roland-type drum machines, Start-Stop socket and built-in software.

The new software, which is updatable, includes on-screen help pages, and the 3B is priced at £195 (plus Vat). There's also a new software revision for the existing UMI-2B, with over 30 updates filling two Roms. More information from the addresses given below.

U-Music Ltd, 17 Parkfields, London SW15 6NH
Cheetah Marketing, 1 Willowbrook Science Park, Crickhowell Road, St Mellons, Cardiff. Tel 0222 777337.

If you have any queries or tips for this column, please write to Mark Jenkins at **Popular Computing Weekly,** 12–13 Little Newport Street, London WC2H 7PP. Mark would also welcome examples of your own music on audio or program tape, or disc.



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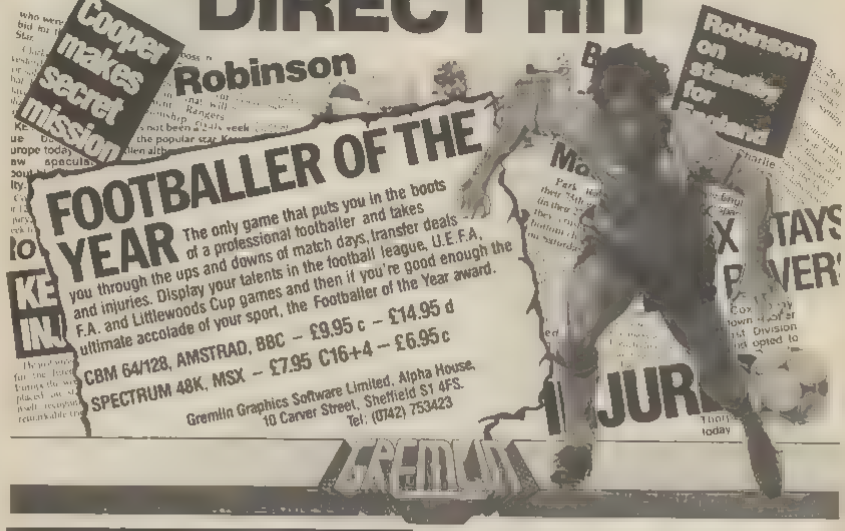

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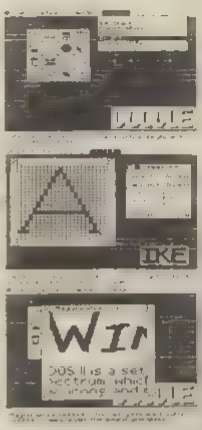

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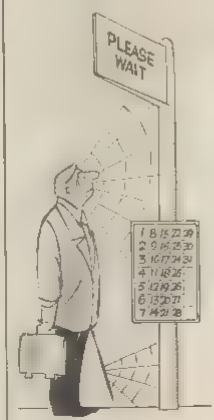

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AMSTRAD 6128 colour computer with monitor £250. No offers. Phone 0582 581913 (Luton), new condition.

AMSTRAD disc software: Tasword 6128 £10, Elite £8, Rembrandt [illegible]. Price of Magick £8. They Sold A Million £6. Phone 059 588 394 evenings.

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CBM 128, 1570 disc drive, C2N, £500 of software, £470. Tel Chris, Witney 5382, would consider swap with Amstrad 6128 colour computer.

New Releases

Amstrad CPC

Program *Rebelstar* **Type** Strategy **Price** £1.99 **Supplier** Firebird Software, 64–76 New Oxford Street, London WC1A 1PS.

Budget strategy as the rebels storm the barricades. Ideologically sound strategy game that's well worth the investment.

Program *Sport of Kings* **Type** Arcade **Price** £2.99 **Supplier** Mastertronic, 8–10 Paul Street, London EC2.

Program *Starglider* **Type** Arcade **Price** £14.95 (tape) £19.95 (disc) **Supplier** Rainbird Software, 74 New Oxford Street, London WC1A 1PS.

Amstrad version of the ST classic, and contract programmers Realtime just about pull it off. Obviously not as colourful or as fast as the original, but still retains much of the excitement.

Program *Tarzan* **Type** Arcade Adventure **Price** £9.95, (tape) £14.95 (disc) **Supplier** Martech. Martech House, Bay Terrace, Pevensey Bay, East Sussex BN24 6EE.

Program *Ace* **Type** Arcade/Simulation **Price** £9.95 (tape), £14.95 (disc) **Supplier** Cascade Games, Harrogate, North Yorkshire.

Program *Bobby Bearing* **Type** Arcade/Strategy **Price** £8.95 (tape), £14.95 (disc) **Supplier** The Edge, 36/38 Southampton Street, London WC2E 7HE.

Excellent conversion of the Spectrum game that will either have you hooked with its puzzles and cuteness – or leave you stone dead.

Program *Rogue Trooper* **Type** Arcade **Price** £9.95 **Supplier** Piranha, 4 Little Essex Street, London WC2R 3LF.

Program *Battlefield Germany* **Type** Strategy **Price** £12.95 (tape), £17.95 (disc) **Supplier** PSS, 452 Stoney Stanton Street, Coventry CV6 5DG

Program *Murder off Miami* **Type** Adventure **Price** £7.95 **Supplier** CRL, 9 Kings Yard, Carpenters Road, London E15 2HD

Program *Trivial Pursuit – Young Players' Edition* **Type** Quiz **Price** £14.95 (complete), £7.95 (questions only) **Supplier** Domark, 24 Worple Road, London SW20 8PN.

New questions for younger players – available as a new data set if you already have the original game. Baby Boomer and Genus II editions already in the planning stage.

Atari XL/XE

Program *Caverns of Enban* **Type** Arcade **Price** £1.99 **Supplier** Firebird Software, 64–76 New Oxford Street, London WC1A 1PS

Not the most original of concepts as messing around in caverns has been has long been an arcade cliche, but well enough done.

Program *Masterchess* **Type** Strategy **Price** £1.99 **Supplier** Mastertronic, 8–10 Paul Street, London EC2.

Program *Back to Reality* **Type** Arcade **Price** £1.99 **Supplier** Mastertronic, 8–10 Paul Street, London EC2.

Program *Silicon Dreams* **Type** Adventure Compilation **Price** £14.95 (tape or disc) **Supplier** Rainbird Software, 74 New Oxford Street, London WC1A 1PS.

Level 9's Snowball trilogy repackaged and reprogrammed and re-released. Good value introduction to quality adventuring.

Program *Trivial Pursuit* **Type** Quiz Game **Price** £14.95 (tape), £19.95 (disc) **Supplier** Domark, 24 Worple Road, London SW20 8PN.

Pick of the week

PCW Pursuit

Program *Trivial Pursuit* **Type** Board game **Price** £19.95 PCW8256/8512 **Supplier** Domark, 24 Worple Road, London SW20 8PN.

Having surprised almost everyone by the quality of Trivial Pursuit's conversion to home micros, Oxford Digital Enterprises and Domark have squared up to the next challenge – translating it to black and green only.

As with so many PCW implementations, the screen resolution makes for wonderfully detailed pictures, needed here to distinguish between the six different question subjects. In some ways it hasn't quite come off – you'll need to know the game very well before you can automatically distinguish which pattern relates to which subject.

None of the enjoyable elements of the game have been left out on the PCW – TP still throws the dart, taps his foot and puts in a word or two of encouragement. It also has the dreaded music questions, sending the victim into a huddle at the back of the monitor, straining to catch the gist of what sounds like a long bagpipe with a hole in it.

Atari ST

Program *The Wanderer* **Type** Graphic adventure **Price** £24.95 **Supplier** Pyramide via Reo Promotions, 28 Waverley Grove, London N3 3PX

ST version of well-received graphic adventure. Said to be going down well in the States, so file it under illegal arms sales, Swiss bank accounts and impeachment rumors.

BBC/Electron

Program *Elite* **Type** Arcade/Strategy **Price** £12.95 (tape), £14.95 (disc) **Supplier** Superior Software, Regent House, Skinner Lane, Leeds LS7 1AX.

Memories are made of this. *Elite*, the first game I fell in love with (after *Defender*) has now been re-released at a slightly cheaper price, also appearing for the first time on 3½-inch format for the Master Compact.

Collectors of computer trivia will be interested to learn that the game gained the highest market penetration ever achieved on a home micro – well over 50% of end users actually forked out the bananas and bought the thing ... the rest left milk, crackers and a blank disc by the kitchen door on the night of a full moon and in the morning, lo and behold, the pixies had done their work.

More interesting facts. The game made Braben and Bell so much money that they decided to stop programming and concentrate on spending it. Hence *Elite II* is not likely to be winging its way to us until the baroomba runs out. Too bad.

Back to *Elite* itself, the new BBC disc has three versions

on it – the standard game, a 6502 Second Processor version (runs faster plus more colour, if I remember correctly) and a Master 128/Turbo version. Possibly worth getting if you have the appropriate kit, but the question is, if all the BBC games players have a copy of *Elite* – and believe me, they have – who the hell is going to buy it now?

C16/Plus 4

Program *Spiky Harold* **Type** Arcade **Price** £1.99 **Supplier** Firebird Software, 64–76 New Oxford Street, London WC1A 1PS.

Program *Magician's Curse* **Type** Arcade Adventure **price** £6.95 **Supplier** Gremlin Graphics, Alpha House, 10 Carver Street, Sheffield S1 4FS.

The 48 full-colour screens of this quest for the seven talismen is fair enough, but emphasises that the C16 only comes into it's own when running a fast, basic, shoot-'em-up.

Program *Fighting Warrior* **Type** Arcade **Price** £5.95 **Supplier** Melbourne House, 60 High Street, Hampton Wick, Kingston Upon Thames, Surrey.

CBM 64

Program *Twinky goes Hiking* **Type** Arcade **Price** £1.99 **Supplier** Firebird, 64–76 New Oxford Street, London WC1A 1PS.

Mr Men-style characters racing each other over a variety of landscapes for the affections of a Ms Woman. The game is as bad as the plot line.

Program *'43 – One Year After* **Type** Arcade **Price** £9.95 (tape), £14.95 (disc) **Supplier** American Action AB, PO Box 10090, 200 43 Malmo, Sweden.

Contender for the most side-splitting arcade clone this year. *'43 – One Year After*. One year after you got it – *1942*, although by the standard of design and programming, you might be forgiven for thinking it's 1842.

Program *Conquest* **Type** Arcade **Price** £2.99 **Supplier** Mastertronic, 8–10 Paul Street, London EC2.

Program *Avenger – Way of the Tiger II* **Type** Arcade Adventure **Price** £9.95 (tape), £14.94 (disc) **Supplier** Gremlin graphics, Alpha house, 10 Carver Street, Sheffield S1 4FS.

Slightly misleading in that it doesn't look anything like the original game – the plot continues on from *Tiger 1* as you attempt to avenge the death of your foster-father Naijishi. Try saying that after twelve pints of lager.

Program *Lightforce* **Type** Arcade **Price** £8.95 **Supplier** Faster Than Light, Sedgley Road East, Tipton, West Midlands DY4 7UJ.

Makes less of an impact on the 64, mainly because the standard of shoot-'em-ups is higher on the thing, but it's still high class auto-fire action from FTL.

Program *Tarzan* **Type** Arcade Adventure **Price** £9.95 (tape), £12.95 (disc) **Supplier** Martech, Martech House, Bay Terrace, Pevensey Bay, East Sussex BN24 6EE.

Program *Arctic Fox* **Type** Arcade/Strategy **Price** £14.94 (disc), £9.95 (tape – available from 15th Dec) **Supplier** Ariolasoft, 68 Long Acre, Covent Garden, London WC2E 9JH.

Commodore 64 version of Battlezone plus strategy game, originally custom programmed for the Amiga. It's you and your tank vs the aliens – odds on it's not going to be a draw either.

Program *Tracker* **Type** Arcade/Strategy **Price** £14.95 (tape), £17.95 (disc) **Supplier** Rainbird, 74 New Oxford Street, London WC1A 1PS.

Rainbird's first wargame has a nice plot (computer taking over entertainment complex), reasonable implementation and possibly one of the worst novellas ever to accompany a computer program. Full review next week.

Program *Breakthru* **Type** Arcade **Price** £9.99 (tape), £14.99 (disc) **Supplier** US Gold, Unit 2/3 Holford Way, Holford Industrial Estate, Birmingham B6 7AX.

Coin-op licence. Manoeuvre your armoured car over various terrains – zap everything that gets in your way. Furious action for would-be traffic offenders.

Program *Bobby Bearing* **Type** Arcade/Strategy **Price** £8.95 (tape), £12.95 (disc) **Supplier** The Edge, 36/38 Southampton Street, London WC2E 7HE.

Program *Xeno* **Type** Arcade **Price** £7.95 **Supplier** A&F, Argus Press Software, Victory House, Leicester Place, London WC2H 7NB.

Penny Football on a computer, I tell them – but it doesn't stop this being fast, furious fun. Easily one of the best A&F releases in ages.

Program *Judge Dredd* **Type** Arcade **Price** £9.95 (tape), £14.95 (disc) **Supplier** Melbourne House, 60 High Street, Hampton Wick, Kingston Upon Thames, Surrey, KY1 4DB.

Program *Warrior II* **Type** Arcade **Price** £9.95 (tape), £12.95 (disc) **Supplier** Nexus Productions, DSB House, 30 High Street, Beckenham, Kent BR2 0XW.

This most intents and purposes a follow-up to *Psi Warrior* – that Beyond oldie. Nicely done by the team of Paul Voysey and Tayo Olowu.

Program *Murder off Miami* **Type** Adventure **Price** £7.95 **Supplier** CRL, 9 King Yard, Carpenters Road, London E15 2HD.

Program *Defcom* **Type** Arcade **Price** £8.95 **Supplier** Quicksilva, Argus Press Software, Victory House, Leicester Place, London WC2H 7NB.

Program *Trivial Pursuit – Young Players Version* **Type** Quiz **Price** £14.95 (or £7.95 as data set) **Supplier** Domark, 24 Worple Road, London SW20 8PN.

PC Compatibles

Program *Jewels of Darkness* **Type** Graphic Adventures **Price** £19.95 **Supplier** Rainbird Software, 74 New Oxford Street, London WC2.

Program *Trivial Pursuit* **Type** Quiz **Price** £19.95 **Supplier** Domark, 24 Worple Road, London SW20 8PN.

Basically, it's the best

It is now nearly five years since I was swept into the world of computing, with what seemed at the time a complex, mysterious machine, namely a ZX81. On this little 1K wonder I learnt the fundamentals of programming. That it was just a crude Basic I was programming in was immaterial, the thing that counted was the fact that I was actually programming the machine. Since that time, things have come a long way.

I now own a QL, which I bought for a little under three times the price of the ZX81. That included a mono-monitor, twin microdrives, the free software, and not forgetting the 128K memory, eight colours, hi-res, etc. Of course, QL SuperBasic is just that, a super version of the old workhorse.

Unlike languages like Pascal, Fortran and Cobol which are defined under a set standard, Basic can be modified to the manufacturer's wishes, as long as the bare bones structure is kept. One could design a Basic which looked so much like, say, Pascal, that to use it as a normal Basic would be a vast under-use. This would be like using BBC or QL Basic without touching procedures or functions.

The reason I'm going on about Basic so much is that there is so much more that could be done to improve it. With each radical new micro launched, a new dialect will be introduced which will, in most cases, supersede the version that went before.

"One could design a Basic which looked so much like, say, Pascal, that to use it as a normal Basic would be a vast under-use"

However, the more complex the Basic, the slower it will run. The answer to faster Basic is a) run it on a machine with a faster processor, or b) to compile it. Combining these two should provide a very fast, flexible and (relatively) easy to use language.

As it is, most machines come with a built-in interpreted Basic, and because it is so, it is slower than its compiled counterpart. It would be nice if manufacturers provided machines with a good screen editor and a built in compiler on Rom. With huge memories now becoming the norm, programs could be written, compiled into memory and run from memory without using any backup medium until a programming session was complete.

Fortran programmers may be used to accessing huge libraries of routines from within a program to perform special operations. A compiled Basic could, for example, make calls to procedures not resident in memory, but on hard, floppy or Ram disc. Thus a user could incorporate the same routines in different programs, without having to copy them into the source file.

A sufficiently powerful Basic would not be looked down on as a language where one gains 'bad' habits. In fact, even the most basic Basic allows for some modicum of structure, with judicious use of *Gotos* and *Gosubs*.

I have reached a level where, using a Pascal screen editor, I am able to dispense with line numbers completely. This has the advantage of being able to rearrange the order of the procedures and functions, search for variable names etc. Of course, I can't run the program until I load it into the computer (which automatically prefixes line numbers), but a well organised program shouldn't need too much editing.

It seems strange after using a ZX81 to see something as expensive and powerful as, say, an Amiga and find it still using a Basic which is essentially the same as old ZX Basic.

At least I can be sure that the language people love to hate will be around for some time to come.

Steven Gray

NEXT WEEK

Hardware

Not content with attacking the top end of the micro market with the STs, Atari is one of the companies predicting the resurgence of the cheap games consoles.

We take a long hard look at Atari's update to its range, the 7800 machine.

Karate Kid II

Marvel at the detailed, life-like graphics in our full colour review of Microdeal's latest.

Arcade Action

Anyone stuck in Piranha's fiendish *Strike Force Cobra?* Extricate yourself with the help of Tony Kendle's hints and tips.

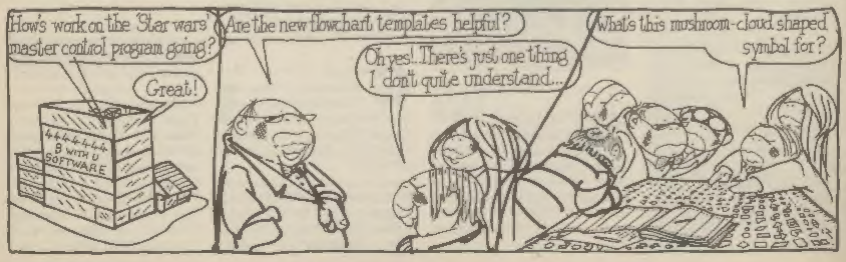
Chess Board

Colossus author Martin Bryant brings you all the latest from the world of computer chess.

CPC Assembler

Don't miss the second part of Robert Osborne's assembler/disassembler for the Amstrad CPCs.

Hackers



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TEL: (0423) 504053